LONDON GUARANTEE BUILDING
Michigan Avenue at Wacker Drive
THE HOME OF

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MONTHLY TRADE PUBLICATION
Established January, 1944
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DANA CHASE PUBLICATIONS
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Chicago 1
Telephone CEntral 6-1229

A trade publication devoted to the interests of the manufacturers of major home appliances and allied metal products. Covers plant facilities and manufacturing problems from raw metal to finished product, with special emphasis on metal finishing.

Free controlled circulation to management, purchasing, engineering and key plant personnel in companies intimately connected with the field covered. To others, subscription price $3.00 per year. Foreign subscription price (U.S. funds) $5.00 per year.

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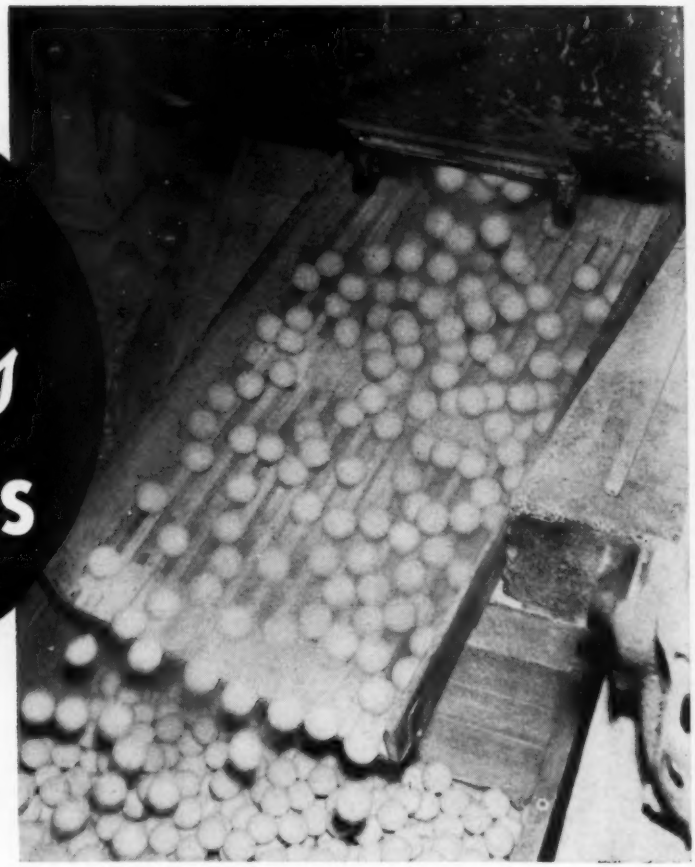
Acceptance under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

JULY • 1949
Vol. 6 • No. 7

finish

FROM RAW METAL TO FINISHED PRODUCT

This Test *Assures* their Fitness



• HAND ROLLED GRINDING BALLS

Made from specially developed vitreous porcelain body and hand rolled for faster, uniform grinding. Mill tested and individually inspected before shipment to you.

• MILL LINING BRICK

Low in glass content, McDanel Mill Lining Brick gives maximum resistance to wear and long, satisfactory service. Complete size range to fit every size mill.

• MILL HEAD ASSEMBLIES

Be sure to specify McDanel Mill Head Assemblies on your new mills. No metal can contaminate your mill charge with these patented covers. They are tops for uniformity of batch and long service.

• METAL COVERED GRINDING JARS AND MILLS

Protected with heavy gage steel jacket McDanel Metal Covered Grinding Jars and Mills are easy to handle, easy to clean, discharge rapidly and stand up under long usage.

McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNSYLVANIA

For our own protection as well as yours, every McDanel Hand Rolled Grinding Ball is rigidly tested in an uncushioned mill before shipment.

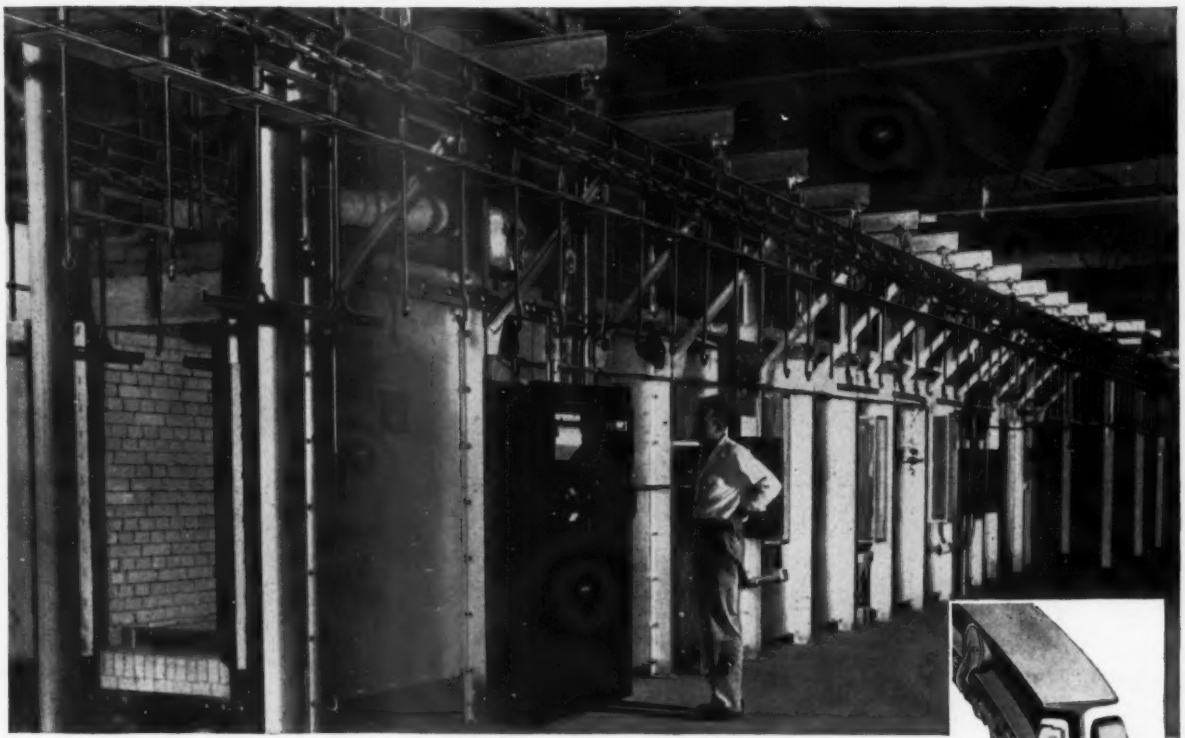
Upon completion of test, each ball is carefully inspected for the least imperfection. All but a very few pass this test with ease and are ready to be bagged and shipped.

McDanel Grinding Balls merit your complete confidence in their ability to give fast grinding, long service and true economy.

West Coast Representative
Fernholtz Machinery Company,
150 N. Norton Ave., Los Angeles, Calif.

CHICAGO VITREOUS ENAMEL PRODUCT CO.
CICERO 50, ILLINOIS
Exclusive Representative for the Enameling Industry

Handling a Hot Job
with LINK-BELT Trolley Conveyor

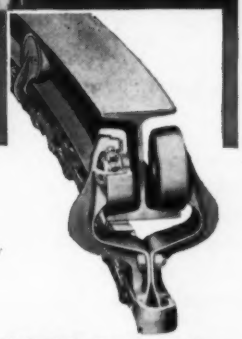


When engineers of Drever Company, Philadelphia designed the industry's shortest continuous furnace for American Valve & Enameling Company of Indianapolis, they specified a Link-Belt overhead conveyor for transporting the enameled pieces to be baked.

Space—an important factor in the 58 foot furnace — is conserved, because the conveyor is compact, overhead and out of way. Although the firing temperature is 1500 to 1600° F., the conveyor operates efficiently with a minimum of maintenance. The smooth jerk-free operation is essential to eliminate loss and damage in handling, and results in a high quality product.

Link-Belt power transmission with variable speed control permits changing the size of pieces to be processed from one square inch of light gauge to 32 square feet of heavy gauge in a matter of minutes. Considerable time is saved in changing to runs of varying sizes.

The wide flexibility of Link-Belt chains, trolleys, rails, and turn and drive equipment affords a simple and economical method of handling practically any type of material.



Link-Belt Overhead Conveyor Trolleys are the last word in rugged strength, simplicity, smooth operation. Note the construction, with drop forged steel wheels and brackets with full complement ball bearings operating in hardened steel races, assuring long life and trouble-free operation. For new or existing systems, Link-Belt Trolleys will give extra smooth, efficient service at lowest cost. Send for Folder 2241-A.

• A Link-Belt engineer will gladly offer suggestions on how you can solve your own particular conveying or power transmission problem. Consult your nearest Link-Belt office.

11,220

LINK-BELT

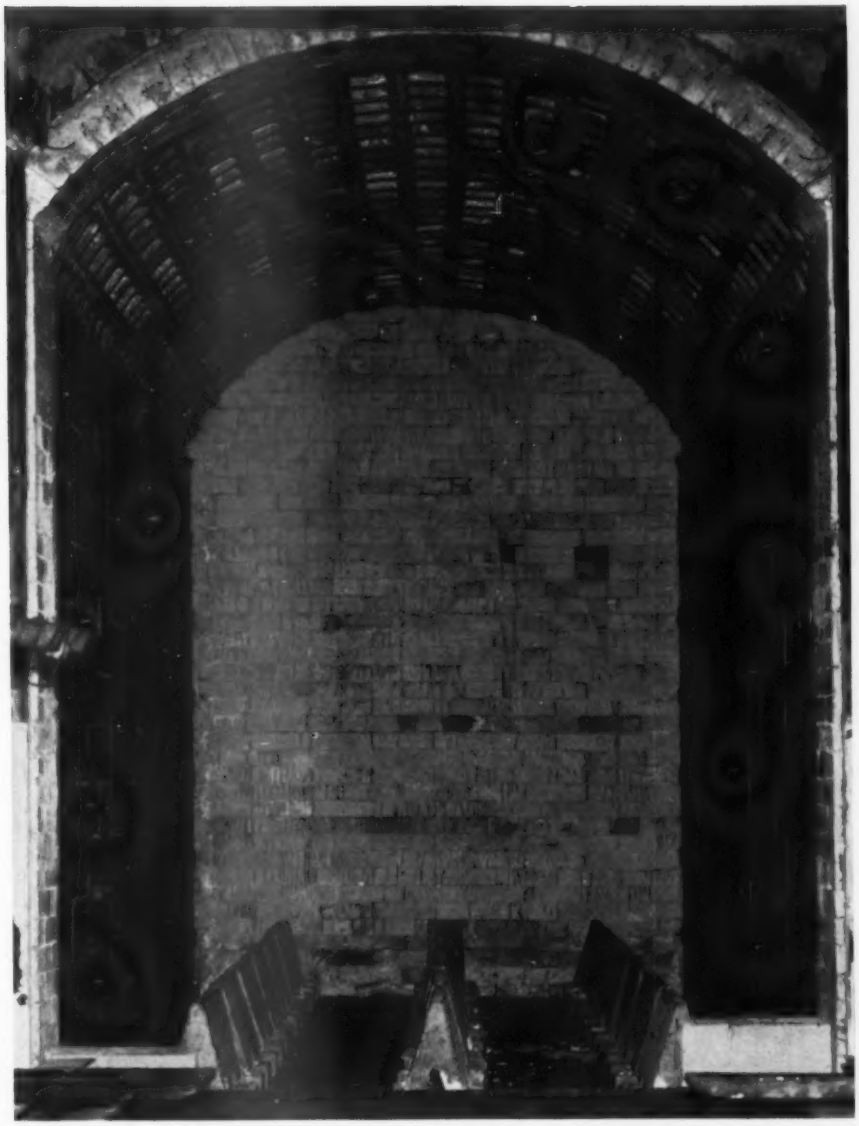
OVERHEAD TROLLEY CONVEYORS

LINK-BELT COMPANY

Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

He can SHOW as well as tell you *what he can do for you . . .*

Because NORTHWEST products have a distinctive appearance, our men have always carried samples. Now they are equipped with a case in which products in general use are carried together with equipment for their control. There are liquids and powders—some for use individually, others in combination to get the correct pH for the type of soil to be removed . . . NORTHWEST men are thoroughly experienced in all phases of cleaning and surface preparation. They make the correct recommendation as to which product or products to use—handle their installation and set up their control . . . Ask the NORTHWEST man to SHOW you as well as tell you what he can do for you . . . .



It's HUYCK for skilled masonry--

key to economical furnace construction and maintenance

★ ★ ★ In the successful, trouble-free operation of an enameling furnace so much depends upon the quality of the masonry and muffle installation. The HUYCK record of over 20 years of skilled masonry service to porcelain enameling plants speaks for itself. So — no matter what your plant masonry requirements may be, furnace or otherwise, HUYCK can do the job quickly . . . efficiently . . . economically.

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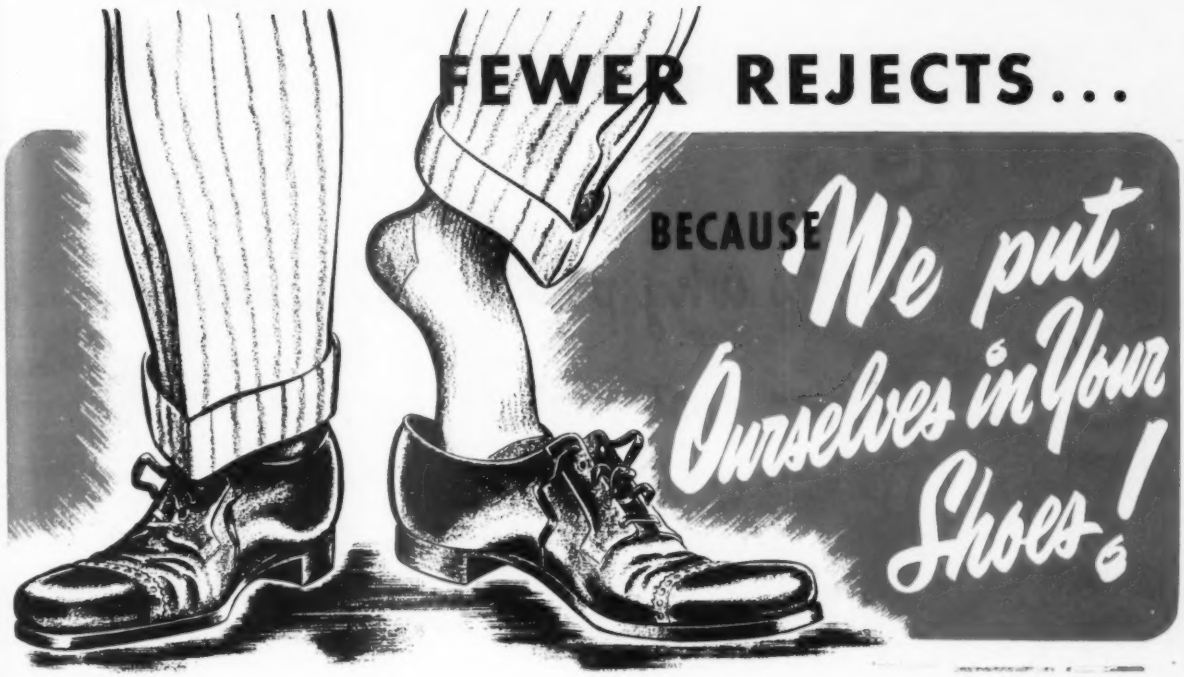


FEWER REJECTS...

BECAUSE *We put Ourselves in Your Shoes!*

5 OTHER GOOD REASONS FOR USING PORCELFRIT

1. PLANT TESTING—Right in our own job enameling plant, under conditions of actual use, we use PORCELFRIT. When you get it, it's *right.*

2. LABORATORY CONTROL—Our ceramic engineers maintain constant contact with the production staff to make *sure* of highest quality.

3. IMPROVED SMELTING—Ing-Rich uses unquestionably the world's finest smelting method, the result of exhaustive research and experiment.

4. SERVICE ENGINEERING—Our service engineers are available to make sure that PORCELFRIT works right for *your* product. You take no chances.

5. EXPERIENCE—Since 1901 Ing-Rich has pioneered in porcelain enameling. We have learned a lot in that time—and our customers profit by it.

Any means of reducing rejects puts money in your pocket.

To accomplish this, you exercise careful control over every plant operation. You hire the best help you can possibly find; you work for a durable, high-lustre finish; you try to inspire every worker with pride of craftsmanship; you do everything you can *within your plant* to turn out a saleable commodity that *stays* sold.

The place to start cutting rejects is back *before* that—in the frit you buy. Because PORCELFRIT is made by people who actually use it in their own enameling department . . . because we put ourselves in your shoes and know your problems . . . PORCELFRIT is *right* when you buy it. Not by guesswork, not even because of our careful laboratory control, but because we *use it ourselves* and make sure it gets the right results!

INGRAM-RICHARDSON

MFG. CO., OF INDIANA, INC.

OFFICES, LABORATORY AND PLANT

FRANKFORT, INDIANA

ING-RICH PORCELFRIT "The Plant Tested Frit"

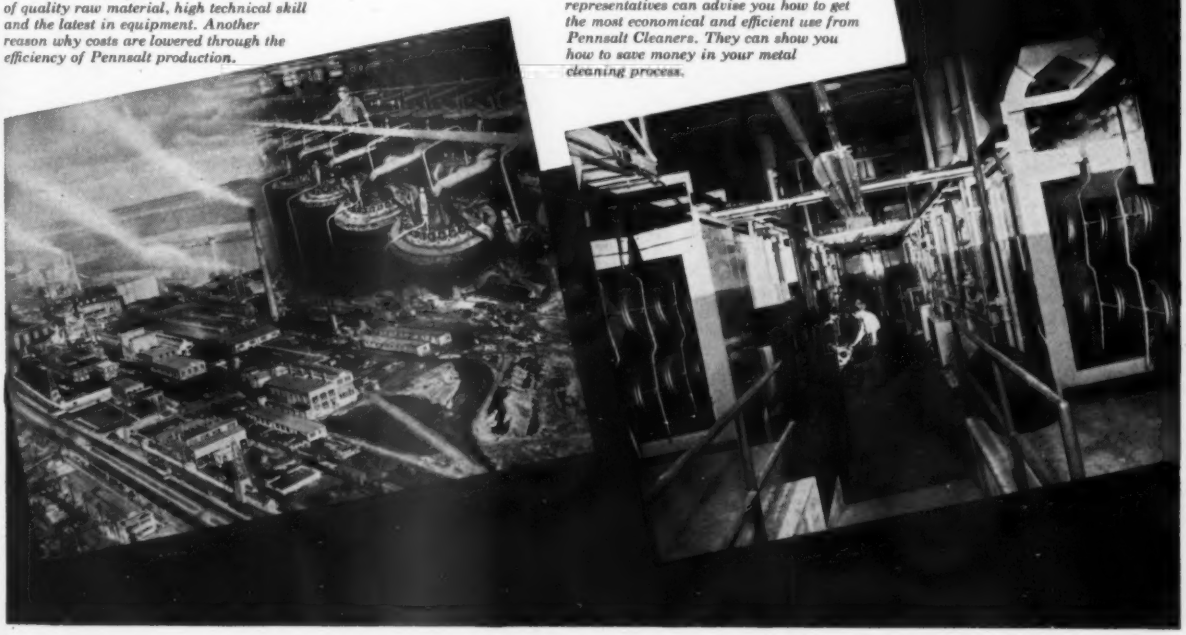
FOUR good reasons why more and more porcelain enamelers are calling in Pennsalt to help them lower cleaning costs prior to enameling. You save TWO ways: Production is uninterrupted by rejects due to cleaning: long-lasting anhydrous Pennsalt Cleaners reduce the need for recharging. Investigate Pennsalt Metal Cleaners today! It pays! Write: Special Chemicals Division, Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pa.

SALT

chemica
comp

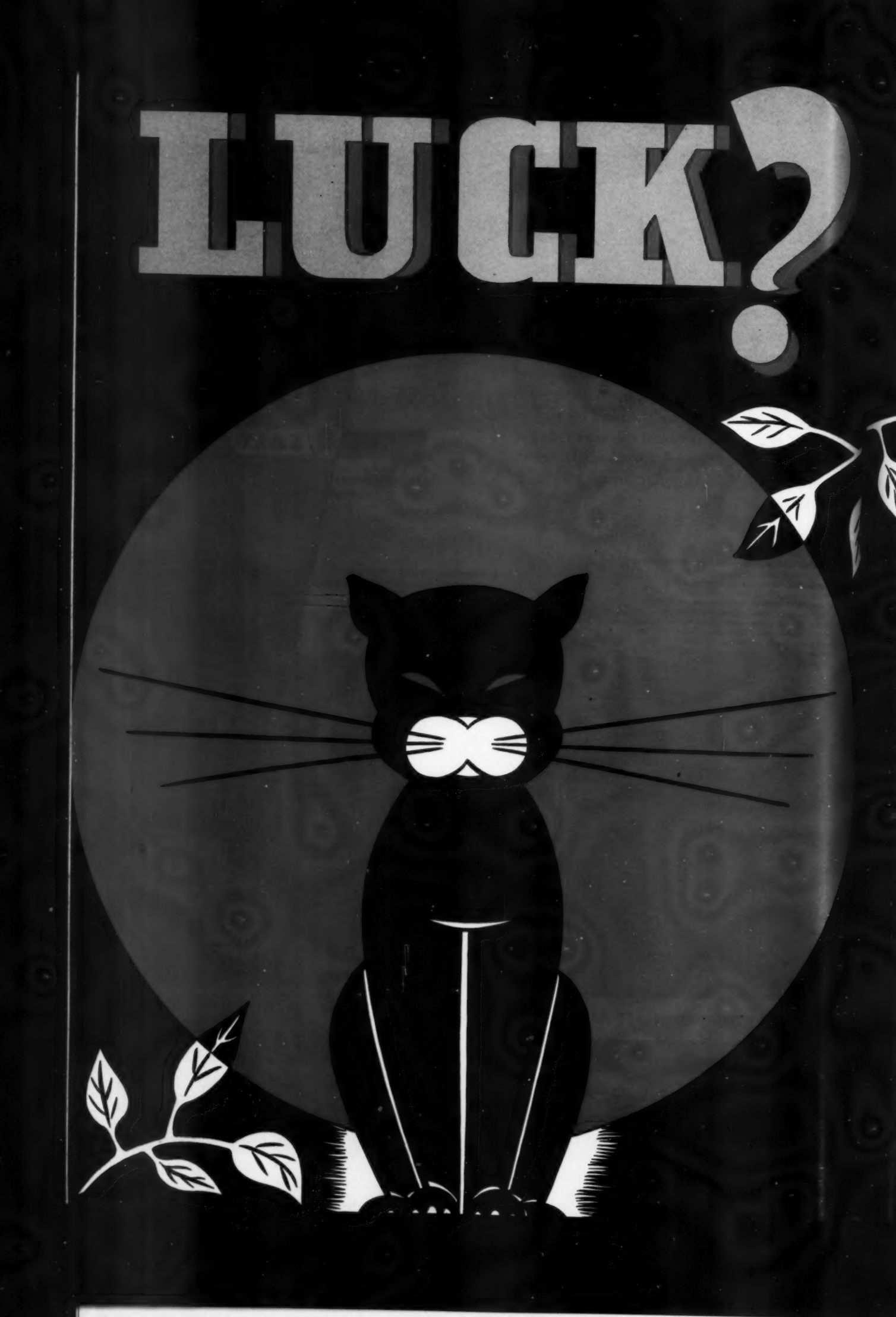
3. MANUFACTURING SKILL—*From Pennsalt's many manufacturing plants come the ingredients for the best in metal cleaning compounds. That's because Pennsalt's manufacturing skill comprises 99 years of progressive chemical experience. Pennsalt Metal Cleaners represent a combination of quality raw material, high technical skill and the latest in equipment. Another reason why costs are lowered through the efficiency of Pennsalt production.*

4. TECHNICAL SERVICE—*No sale is considered complete until the product is proving successful in use! That's why the Pennsalt Metal Preparation Service is offered. Experienced Pennsalt representatives can advise you how to get the most economical and efficient use from Pennsalt Cleaners. They can show you how to save money in your metal cleaning process.*



PENNSALT 37 • PENNSALT 45X • PENNSALT 45X-2 • PENNSALT 30 • PENNSALT EC-12

and Cements • Muriatic Acid • Anhydrous Hydrofluoric Acid • Sulfuric Acid • Sal Ammoniac


LUCK?

HELL NO!

Is it luck that brings a company *from scratch* to *leadership* in its field?

Hell, no! Man it required hard work, ingenuity, *courage and determination* for PEMCO to reach the top. Is it luck that, in more than 39 years of progress, PEMCO has developed more "firsts" than any other "frit" manufacturing company?

Hell, no! It required money . . . *a tremendous amount of research* . . . persistency . . . the most modern equipment . . . to create *products that make a profit for you.* Is luck responsible for the tremendously satisfying performances of TITANIUM COVER COATS by PEMCO . . . regular NEOWITE as well as the unusually successful low temperature 1400°- 50° NEOWITE?

Hell, no! Each single ounce, pound or carload represents painstaking research by the most brilliant, analytical minds, working in *the industry's finest* and most complete *laboratories.*

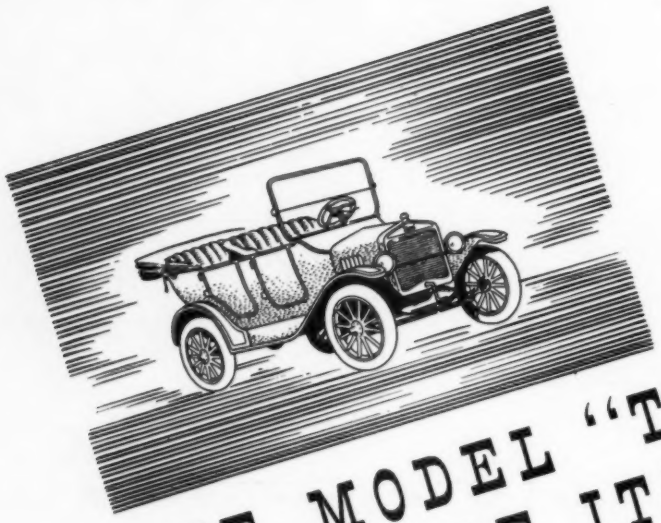
Is it luck when production run after production run, of Titanium Cover Coats by PEMCO, consistently *maintain* an unusually *high* standard of *uniform quality*? Hell, no! It's just the physical result of Wholly Continuous Smelting, minute control of quality materials, scientifically blended with *more than 39 years of experience.*

To prove that PEMCO Quality isn't "luck" insist on samples for a production run in YOUR Plant.

PEMCO CORPORATION

Baltimore 24, Maryland

Always Begin With a Good Finish



WHEN THE MODEL "T" WAS AT THE HEIGHT OF ITS GLORY

'Way back in those days, New Monarch was on the job, turning out special accessories such as foot throttles, fender braces and carburetor choker springs — each designed for its particular purpose to assure smoother performance or better road service for the popular Model "T".

As then, so today! New Monarch's facilities and skills are still available for the improvement of your product. Constant growth and up-to-the-minute improvements in our plant and manufacturing methods have enabled us to vastly extend our services, till today we feature a Complete From-Blueprint-To-Shipping-Carton Service. The Doodle Bug Scooter, built by us as a complete, packaged unit for the Bean Mfg. Co. is an example.

Even as the old Model "T" was quite the marvel of its day, at least from the economy standpoint, so we today pride ourselves on our three modern, fully equipped plants, geared to top production and waiting to serve you.

When you think of Stampings, think of

NEW MONARCH MACHINE & STAMPING CO.

406 S.W. NINTH STREET — DES MOINES 9, IOWA

MONARCH QUALITY

To improve your products, consider New Monarch's Complete From-Blueprint-To-Shipping-Carton Service. Our engineers are ready to assist you in an economical production program. Write for details.

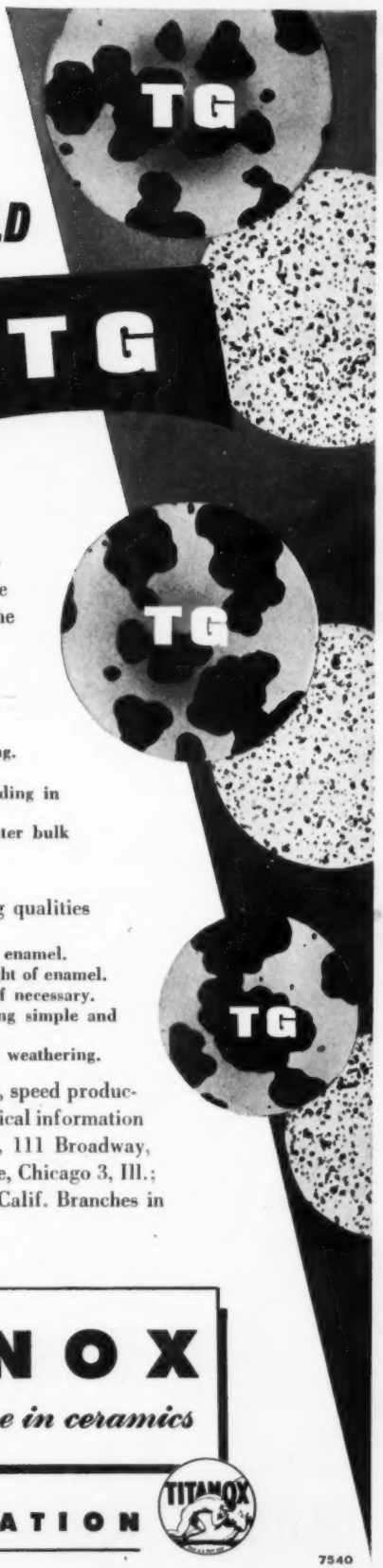
Announcing...

a NEW SPECIAL

Titanium Dioxide for the CERAMIC FIELD

® TITANOX-TG

Comparative photomicrographs of new TITANOX-TG for ceramic use and TITANOX for pigmentary use.



Now it's here — TITANOX-TG — a *new*, non-pigmentary grade of titanium dioxide, exclusively developed for high quality porcelain enamels. The highly desired, but previously unobtainable characteristics of TITANOX-TG speed production and lower the cost of making fine vitreous enamels:

NEW PARTICLE SIZE

- Flows easily in the dry state.
- Will not stick or ball up.
- Discharges readily from bins and hoppers. No hard packing.
- Will not sludge out in the smelter.
- Eliminates pre-mixing and hammer milling in dry blending in many cases.
- Reduces warehouse space and charges because of greater bulk density.

NEW MAXIMUM TITANIUM DIOXIDE CONTENT

Assures constantly and uniformly, the outstanding qualities of titanium enamels:

- High acid resistance and high opacity in the *same* enamel.
- High opacity and reflectance at low application weight of enamel.
- High reflectance and whiteness — easily modified if necessary.
- Adaptability for refiring that makes spot repairing simple and invisible.
- High resistance to abrasion, thermal shock and weathering.

The use of TITANOX-TG will improve your product, speed production and lower costs. Write today for further technical information on TITANOX-TG. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 South Michigan Avenue, Chicago 3, Ill.; 2600 South Eastern Avenue, Los Angeles 22, Calif. Branches in all other principal cities.

® **TITANOX**

the brightest name in ceramics

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

7540

THE Finish Line

WE'VE BEEN HARPING — on the necessity for a return to some good old fashioned "doorbell pushing" selling at the retail level. Some good educational work is being done in this direction by appliance and other metal product manufacturers. There are some indications of healthy increases in factory production and some evidence of spotty "selling" by retail outlets. The point we would like to make is that the return to "shirt sleeve" selling should be greatly accelerated — and it is up to the manufacturer to prove to his dealers that appliances *can* be sold by showing him *how* to sell them.

The facts are plain

Read the report on the recent meeting of cooking and heating appliance manufacturers at Cincinnati, Ohio, including references to the remarks of such men as Louis Ruthenberg, of Servel, and Vergil Reed, of J. Walter Thompson, and you will recognize several points on which business leaders will agree. As examples: (1) The backdrop for future business is good, whether it is measured by population or by dollars in the bank. (2) Today's "buyer" must be "sold," and with facts that pertain to product quality and dependability. (3) The entire distributing system is beset with a serious malady resulting from long years of inaction and "over-the-transom" selling. (4) Price adjustments (downward) are in the air, and may be required for many products.

Price adjustment is not the only answer

Few metal product manufacturers with whom we have talked feel that there is any doubt that reasonable price adjustments are now required to assist in a return to a high level of consumer purchasing and factory production.

Mr. Reed offered a word of advice in this connection. Decide on your price policy. If reductions are to be made, make them significant and in one step — to new prices that will be stable and that you can hold. Don't "nibble" at prices so that neither your distribution channels nor the ultimate buyer can know what to expect.

A most important fact has been proved repeatedly during recent months: that price and price alone is not the answer and, further, that *unwarranted drastic reductions* are not the answer.

"Bargain sales" of appliances and many other products have in many cases failed to produce the expected results — a strong indication that the buyer with money in his pocket is not interested in "cut price bargains" or distressed merchandise, but in *better values* for his dollars.

As for moving high cost inventories, Mr. Reed offers the choice of "taking (price) cuts, or sending your own salesmen out to help the dealers move them . . . "

Take the first step if you can — or both — but by all means get all of your available manpower with *retail selling experience* out on the firing line to prove to dealers and dealer salesmen that there is more to selling than holding an order book in the middle of a salesroom floor.

It will work in 1949

Our early training in the "art" of appliance selling started in 1926. We learned that it was possible to go into a town where appliance sales were "nil" and with a trained crew of house-to-house salesmen "deliver" the town to the manufacturers of a specific product.

We learned, too, that while such concentrated selling is expensive, the results of such concentrated effort may carry on *(with a diminishing curve)* for as long as four or five years without outside assistance to local outlets.

Each manufacturer can turn to his best prewar results as a direction pointer to the kind of selling that is needed *now*, not tomorrow but *now*.

Reduce prices if you can, based on present material and production costs, but somewhere, somehow provide the funds for concentrated sales training at the dealer level and adequate advertising to back up a program of "shirt sleeve" selling.

Smart dealers have been selling

A friend of ours operates a hardware and appliance store in a small town of 1400 population. Although in a small community, the store would do justice to New York or Chicago. Last year this "small town" dealer did a half million dollar business. Was he waiting for customers to walk in during the seller's market? Hell, no! He had a crew of salesmen out combing the surrounding territory, and sales meetings were held *every week* to keep the crew on its toes.

Multiply that dealer by hundreds, in towns and cities of all sizes, and you have the answer to *peak sales* and *peak production* of major appliances and allied products.

The problem is acute

There is no need to dwell on the retail selling problem. Every manufacturer realizes there is a problem — or says he does — but how many are doing any kind of an effective job to clear it up?

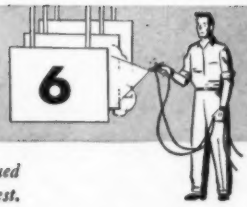
As a prospective customer, walk into the *average* retail store "selling" your appliances. You may or may not be insulted, but we'll wager you won't recognize your own product after the "salesman" gets through with you.

Appliance selling of the type that *moves* merchandise is at a low ebb, and it will very probably remain there too, too long unless the men who build them get on the firing line and bring the words *"specialty selling"* back into the vocabulary of those responsible for retail sales.

Dana Chase

EDITOR AND PUBLISHER

Enameler's Data Sheet No. 6



An informative series on titanium-bearing killed steel for the enameling industry. Issued monthly by Inland Steel Company. Reprints of all data sheets are available upon request.

TITANIUM STEEL HAS EXCELLENT DRAWING PROPERTIES, STRETCHER STRAIN FREEDOM

Previous Data Sheets of this series have described how titanium steel eliminates the need for a cobalt-oxide ground coat, how the thin cover coat possible with this steel reduces chipping particularly in transit, how titanium steel resists sagging and warping, and how crazing and thermal shock are minimized by this metal.

But of equal importance to many manufacturers are the excellent drawing properties of titanium steel. It has been used for practically all of the parts usually fabricated from enameling iron, including bathtubs, washing machine tubs, kitchenware, and stove and refrigerator parts. The fabricating performance has been excellent.

In addition, there is an absence of stretcher strains in parts drawn from titanium steel. And, since titanium steel is a killed steel, aging is not a factor. Because this metal requires no special roller leveling to prevent stretcher strains, shop handling is greatly simplified.

Because of these drawing characteristics developed in titanium steel, enameling shop operators have been able to reduce the handling time and increase the output of finished parts.

Physical Properties

The Rockwell hardness of titanium steel sheets as shipped varies from approximately B-45 to B-60, depending upon the end use. This compares with approximately B-30 to B-50 for enameling iron.

The Olsen cup values for titanium steel are comparable to those of deep drawing enameling iron, and range from approximately 350 for 24 gauge to 465 for 16 gauge. This type of 16-gauge titanium steel sheet has an ultimate or tensile strength of approximately 50,000 psi, whereas the ultimate strength of enameling iron of the same gauge is approximately 45 000 psi.

TI-NAMEL ammunition case, 12" x 12" x 13" deep, formed in three operations without intermediate annealing.

But it should be emphasized that drawing performance depends upon a combination of several properties, rather than upon any single physical or chemical property. Olsen cup and Rockwell hardness numbers are merely control test values used to maintain uniformity of product, and are not in themselves sufficient criteria by which drawing characteristics can be evaluated.

"Oil Can Effect" Eliminated

The performance of titanium steel, when drawn into shallow shapes, has been particularly good. There is generally an absence of the "oil can effect" or "loose" metal which is sometimes bothersome in fabricating parts from enameling iron.

From the standpoint of draw breakage, it has been found that the drawing properties of titanium steel are equally as good and, in many cases, better than deep-drawing enameling iron sheets. One manufacturer, specifically, has found that his draw breakage in fabricating titanium sheet parts was less than 1%—as compared with 6% for deep-drawing enameling iron.

Procedures Recommended

Titanium steel is stiffer than ordinary enameling stock, and it may be necessary to use a restrike operation on certain parts in which flanges are subject to spring back, or allow for spring back in designing the dies.

To enamel titanium steel with a single thin white cover coat, thorough cleaning before enameling should be facilitated by using a lubricant which is easily removable; die scratches should be kept to a minimum in order to eliminate the need for metal finishing wherever possible; and blank and parts should be handled with care to prevent dents and dings.

Future Enameler's Data Sheets will further discuss the properties of Inland TI-NAMEL titanium enameling sheets. If you would like more information on this superior base metal for the enameling industry, write, today.

Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill.

SALES OFFICES: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

OTHER PRODUCTS: Bars • Sheets • Strip • Structurals Plates • Tin Plate • Floor Plate • Piling • Reinforcing Bars Rails • Track Accessories

INLAND STEEL

INLAND TI-NAMEL

Reg. U. S. Pat. Off.

TITANIUM-BEARING KILLED STEEL ENAMELING SHEETS

How International Harvester answers

materials handling and product protection problems

including detailed information on the company's manufacturing research department and its relationship to packaging and shipping problems

By P. L. Houser • GENERAL SUPERVISOR, STANDARDS RESEARCH, AND *R. F. Weber* • GENERAL SUPERVISOR, MATERIALS HANDLING, PACKING AND LOADING, AND PACKAGING RESEARCH, MANUFACTURING RESEARCH DEPARTMENT, INTERNATIONAL HARVESTER CO., AS TOLD TO *Matt E. Heuertz*

Exclusive feature finish

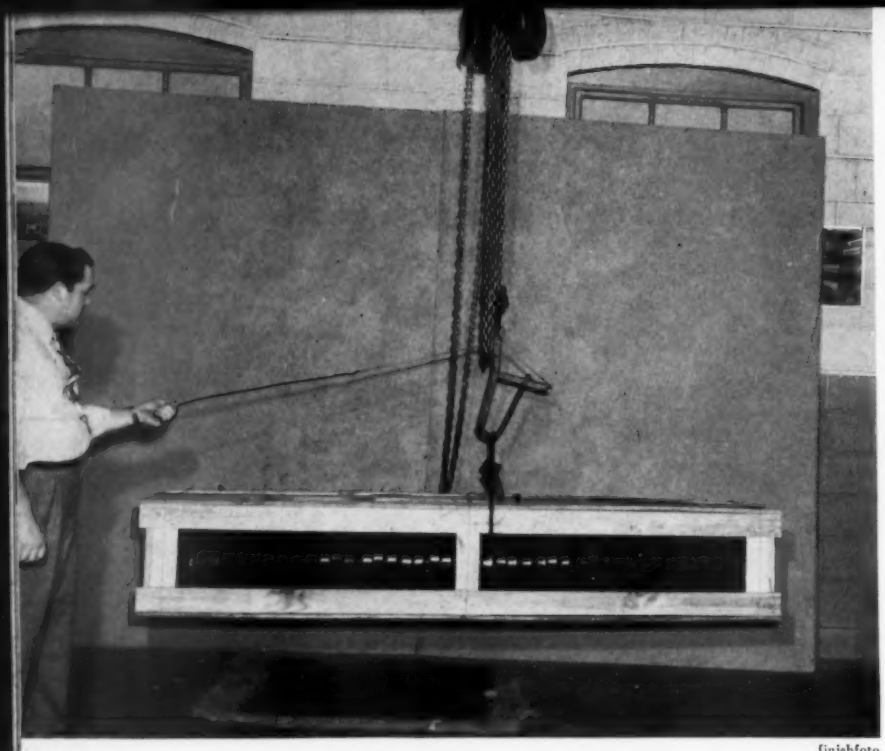
The story of materials handling and product protection research by International Harvester Company represents only one phase of a much broader program of consolidated research covered by the company's Manufacturing Research Department located in Chicago, Ill. As a background for this detailed work of the individual section concerned with packaging and shipping problems, the purposes and functions of the complete department should first be explained.

The importance of consolidated research activity can be readily appreciated when one considers the company's far flung activities and diversified products. There are 26 separate operations located from Auburn, New York, to Stockton, California, and products range from home appliances, such as household refrigerators and home freezers, through farm machinery including farm tractors, industrial power, motor trucks, binder and baler twine.

In early 1944, the company was reorganized along divisional lines and it was then that the Manufacturing Research Department was formed. Its functions were outlined as follows:

1. To study and conduct research concerning technical manufacturing activities of all kinds. *(To keep in touch with technical progress and developments of scientists, engineers and practical factory men on a worldwide scale.)*
2. To formulate standards of manufacturing practices for the divisional manufacturing operations.
3. To conduct manufacturing operations research. *(Directed toward continued improvement of manufacturing activities.)*

The Manufacturing Research Department, under the direction of J. W. Armour, manager, is located in its own building at 5225 South Western Blvd., Chicago, comprising 230,000 sq. ft. of floor space. This segregation of research activity is not for the purpose of divorcing manufacturing research from contact with other Harvester units, but to provide a climate in which research



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Left: Large packages such as this crated thresher pick-up attachment are drop tested with this equipment.

projects can be carried out without distraction.

At the present time there are 235 employees at work in the various subdivisions of the research department. These department subdivisions consist of the following sections: administrative, plant engineering, mechanical engineering, materials handling and product protection, welding, metallurgical, protective finishes (oils, varnishes, paints), inspection methods, forging, foundry, and manufacturing standards.

Each section has its own supervising head. Each also has a research staff and a group of technicians. Every section has been allotted space in the department in accordance with its requirements and full scale research laboratories have been established where necessary. The sections are organized in such a way that they may approach projects assigned to them independently of the other sections. Where projects are of such magnitude, or the character of the problem requires cooperation between two, more, or all of the sections, a collaborative scheme has been worked out. Under this plan one section assumes responsibility for the entire research project but calls upon other sections for assistance in those fields where each is expert.

Left: Testing equipment includes a 1000-lb. vibration machine used to simulate conditions sustained by a shipment in rail or highway transit.

Research investigations

Investigative activities are projected along two general lines. First, the Manufacturing Research Department seeks the most economical method of manufacture for new and improved products or for products already in production in the manufacturing lines; second, it seeks to improve and maintain a high standard of quality in manufactured goods.

Manufacturing standards

The objective contemplated by the development of manufacturing standards has as its goal more than the mere accumulation of data showing the best and most economical method of manufacturing. The data accumulated through research is classified and codified. They are then presented in a form which can be made available to all company manufacturing operations. The standards thus become a method of establishing uniformity of practice and method from plant to plant within the Harvester organization wherever that is desirable.

Another objective in keeping abreast of all developments in the manufacturing world is a measure to insure that advances in manufacturing techniques by others outside the company do not escape the notice of those within the company charged with the responsibility of producing the best possible product at the lowest possible cost.

Department procedure

Projects undertaken by the Manufacturing Research Department or-

Right: Small packages containing parts for Harvester products are drop tested with this equipment.

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iginate from three main sources: (1) The Harvester organization as a whole. These may come from sales departments within the company in the form of customer suggestions, etc.; Harvester manufacturing plants; other research groups within the company. (2) The research department itself proposes projects when it sees opportunities for improvements. (3) Ideas and problems are projected by other industries, in technical literature, by schools and universities, and other research organizations.

In the interest of maintaining a uniform procedure and obtaining a group viewpoint or opinion, each request for investigation received by the research department is given to a screening committee composed of six members of the research staff. This committee records, reviews, and if the research department can undertake the investigation, assigns the problem to a specific section of the department, rating the project as to priority, in established schedules.

The problem is assigned to that section which will have the major interest in the subject. The head of that section is responsible for completion of all work and investigations necessary to secure completion of the project. He may call upon other sections of the department to work on phases of the problem in which they may be expert.

If the nature of the project is such as to make it necessary, as the investigation progresses, interim progress reports are compiled and issued by the responsible section. Upon completion of the project, a final report is issued which records conclusions and recommendations.

Company-wide liaison

Executive heads of the company's operating divisions, which design, produce, and distribute the company's products, have appointed liaison representatives who are responsible for programming divisional problems for consideration and investigation by the Manufacturing Research Department. These liaison representatives permit the divisional operations to take full advantage of the services and facilities offered by the Manufacturing Research Department, and insure that findings within the research groups are properly directed to interested divisional people.

Manufacturing research staff members are actively engaged with and frequently headup Harvester committees whose functions and responsibilities are inter-plant, inter-divisional, or company-wide. This work is typified by the following committees: welding, materials handling, surface finish, etc.

For example, the welding committee concerns itself with the formation of welding standards and the interchange of welding ideas and information between plants. It keeps plants

Right: A scale model flatcar shows how a template is used to place securement blocks on the car floor before tractors are hoisted aboard.

This series of pictures not only illustrates the procedure for "twin packing" a pair of small Farmall Cub tractors for export. The series also is part of a final project report on the development of this export container.

The Materials Handling and Product Protection Research Section develops and tests shipping containers and turns over its findings to the interested manufacturing plants of International Harvester.

The aim in most of these projects is to develop containers that provide the ultimate of protection under the worst shipping conditions, and at the same time are economical and practical to use.

informed of welding laboratory developments. Through members who are also members of national welding organizations, it keeps abreast of developments throughout the country.

The welding committee is composed of representatives from each of the Harvester product manufacturing plants that have welding operations. The chairman of the welding committee is a member of the manufacturing research staff who thus can bring to the welding committee the entire resources and staff of the manufacturing research welding section and laboratory.

How it works

To illustrate the functioning of the Manufacturing Research Department it may be assumed that to make a product a competitive item, the manufacturing cost must be lowered by improving the manufacturing process.

The operating division which produces and sells the product refers the problem to manufacturing research. Assuming the product is a machine, it is first assigned a project designation and referred to the teardown department where it is dismantled and laid out for inspection, part by part. Each part is labeled with the current cost of manufacture and a description of the material used.

Researchers are then called into the first of a series of conferences at which they consider the problems involved. In first-stage conferences, researchers are expected to develop preliminary suggestions designed to reduce the manufacturing cost. It may be suggested some parts be welded instead of riveted, that other parts can be made of different material without impairing life or quality, that use practices have changed making possible a less costly manufacturing process.

Later, estimated costs of new processes and materials will be advanced. This is part of a continuing screening process to develop the more promising ideas. Then the more promising ideas are placed under development. If the mechanical engineering section has been assigned control of the experiment, it will delegate assign-

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Dry-type drawing compounds

for the deep drawing of sheet steel

By R. W. Piper • APEX ALKALI PRODUCTS, PHILADELPHIA, PA.

DURING the last two years, dry-type drawing lubricants have been applied with favorable results by many firms to the deep drawing of steel parts. The dry-type compounds have replaced such materials as water soluble drawing lubricants (pigmented and non-pigmented types) and oil soluble lubricants. Part of my data for this article is based on findings at Strong Manufacturing Company. I am told that their operations were considerably improved through the adoption of the dry-type drawing lubricants.

Dry-type drawing lubricants come in granular or flake form and are generally mixed eight ounces to each gallon of water when used for deep drawing of steel. The mixture is heated to 180° F. and held at that temperature during operation or application. Blanks to be coated may be dipped in this solution, or the solution may be pumped to a set of squeege rolls and applied with the rolls. On light gauge material, it is necessary to follow the coating with a drying oven or hot air blast, as the material should be thoroughly dried to the steel blank surface before such blanks are stacked or stored. Drying oven temperatures should not exceed 300° F. and the cycle through the oven should be long enough to obtain a completely dry surface. This necessary drying is generally completed in two or three minutes.

Steel blanks to be coated should be free of oil to allow proper adherence of the dry-type lubricant and to allow uniform coating. Dry-type drawing compounds are generally made up of such materials as soap, free alkali, borax compounds, wetting agents, etc. One pound of material is estimated to cover 16,000 square feet of surface at the recommended eight ounces per gallon and the 130° F. bath temperature, when the dip method of application is used.

Cleaning or removal of dry-type drawing lubricant can be done with a low concentration of emulsion cleaner in a spray washer at approximately 180° F., or with water at this temperature in spray or bath. A hot dip of an alkali cleaner can also be used. When the finished product is to be painted, best results can be had from an emulsion cleaner, as the employment of such material reduces the rust problem to a minimum. Metal surfaces cleaned with emulsion cleaner are much better for good paint adherence.

Steel coated with dry-type lubricants may be stored for weeks without losing any effectiveness of the drawing film. The stored blanks will also be free of rust, as the material itself is an effective rust inhibitor.

Dry-type compounds of the nature under discussion have been used for years for cold drawing of steel tubing, cold headings of bolts, cold forming of nuts, etc., and have been considered the best known lubricant for these uses. During recent years,

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This photo shows the continuous application of dry-type drawing compound using a zig-zag conveyor with immersion treatment at Sebring (Ohio) plant of Strong Manufacturing Company.

Nickel dip practice and control

for porcelain enameling

By Norman H. Stolte • THE ENAMEL PRODUCTS COMPANY, CLEVELAND, OHIO

THE use of the nickel dip in the vitreous enameling industry is not new. Its advantages and disadvantages were discussed back in 1937 in a paper by James Pettyjohn[1]. During the past three years many manufacturers resorted to the use of nickel dip in order to successfully enamel inferior grades of steel. With the introduction of low temperature enamels, a nickel dip is required at the present time to obtain good bond.

Some plants have obtained inconsistent results with nickel flashing. This is especially true if little or no control is exercised over the nickel bath. In 1945, G. H. McIntyre[2] proposed a new nickel dip procedure. He advocated the use of a 1 oz./gal. solution of a single nickel salt at a pH 3.5. Boric acid is not used as a buffer. The pH is controlled with sulfuric acid and sodium hydroxide. Two neutralizer tanks follow the nickel bath, the first a fairly strong solution of sodium cyanide and sodium hydroxide and the second weaker.

(1) 0.4 oz./gal. sodium cyanide
0.2 oz./gal. sodium hydroxide
(2) 0.12 oz./gal. sodium cyanide
0.10 oz./gal. sodium hydroxide

The lower pH is easier to maintain and also the sludge problem is greatly minimized. It is still advisable to use some sort of filtering system in order to maintain a clear solution.

Before discussing the control and the factors affecting nickel deposition, it is important to remember that once a satisfactory nickel dip setup has been established, those conditions should always be maintained within practical narrow limits of variation.

The nickel salt concentration, pH, length of time ware is in the tank, and temperature are all factors that readily influence nickel deposition. In the absence of automatic temperature control, the tank should be provided with a tank thermometer. The tank should be operated within a 5° F. range. As mentioned previously, the pH at the lower range (3.5) is more easily controlled than at the higher pH (6.0). The nickel deposition rate is also greater at the lower pH. The tests for concentration and pH of the nickel tank have been given in detail many times before and therefore I will merely list some of them[3].

If the lower pH is used, the indicator is Bromphenol Blue with either the LaMotte or Taylor Hydrogen Ion Comparators.

Timer recommended for manually operated pickle rooms

If an automatic pickle setup is not used, some sort of timer should be provided. A switch near the nickel tank connected to an electric timer equipped with a suitable signaling device should aid in controlling the time the load remains in the nickel tank. The amount of agitation of the load in the nickel influences the amount of nickel deposited. There is a marked increase in nickel on loads that have been continually raised and lowered over one that was placed in the tank and allowed to remain there until the end of the time cycle. It may be possible that a more uniform nickel deposit could be obtained if some sort of agitation were provided in the nickel tank. At a pH of 3.2-3.5 the time will range from 5-7 minutes at 170-175° F. on a regular pickle setup.

Many new enameling practices today specify the amount of nickel deposit required for good results. Wainer and Baldwin[4] report that "with any enamel, adherence can be destroyed by the deposition of too much nickel." In the past, very few plants determined the actual amount of nickel deposited. This no doubt was due to the fact that the volumetric method for nickel determination, as commonly used in the porcelain enameling industry, requires considerable technique for optimum results. The gravimetric method requires apparatus not available generally in porcelain enamel control laboratories.

Methods for determination of nickel coatings

During the past year, two methods have been proposed for the determination of nickel coatings on enameling iron. Recently Ikenberry and Canfield[5] presented a rapid method for nickel on the formed piece directly. The sample is obtained by dissolving the nickel coating on a small area with dilute nitric acid. The nitric acid is confined by the use of a weighted rubber ring and is withdrawn by suction into a 200 ml. Erlenmeyer flask, marked at 200 ml. A large excess of ammonium hydroxide is added followed by ammonium persulfate and dimethylgloxime. The solution is diluted to 200 ml. with water and after filtering off the ferric hydroxide, the intensity of the red color, which is proportional to the amount of nickel present, is measured by means of a photoelectric photometer.

Last November, E. A. Brown and I[6] published a method based on the color reaction of nickel and dimethylgloxime. The method depends on the formation of a red color when dimethylgloxime is added to a basic solution of a nickel salt which has been treated with an oxidizing agent such as bromine. The color is also

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Evaluation of porcelain enamel texture

by a plastic-replica technique

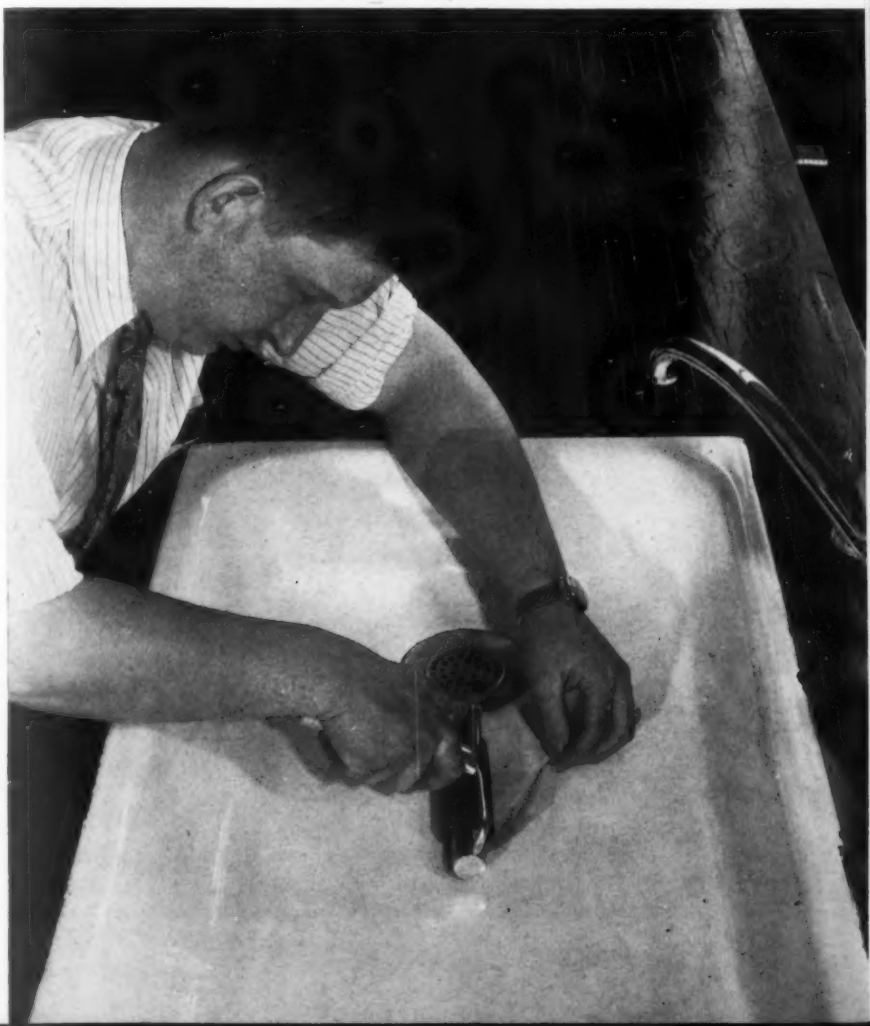
REPORT OF A DEVELOPMENT BY *J. C. Richmond* • OF ENAMELED METALS LABORATORY
A. C. Francisco • P. E. I. RESEARCH ASSOCIATE

A PLASTIC-replica technique* by which the texture of porcelain enamel may be conveniently studied and objectively evaluated has been developed at the National Bureau of Standards. Adapted from a replica procedure developed for use on machined metal, the method of evalution is based on the measurement of the haze of an ethyl cellulose replica of the enamel surface. Such replicas may be readily examined by either transmitted or reflected light, or projected for examination of the enlarged image. Details seen only with difficulty in the original surface are readily visible in the replica, which is a faithful reproduction of the surface texture. Another advantage is that the replica forms a permanent record for subsequent reference. By making a series of replicas during a test or service period, an investigator may follow the progressive breakdown of an enamel surface.

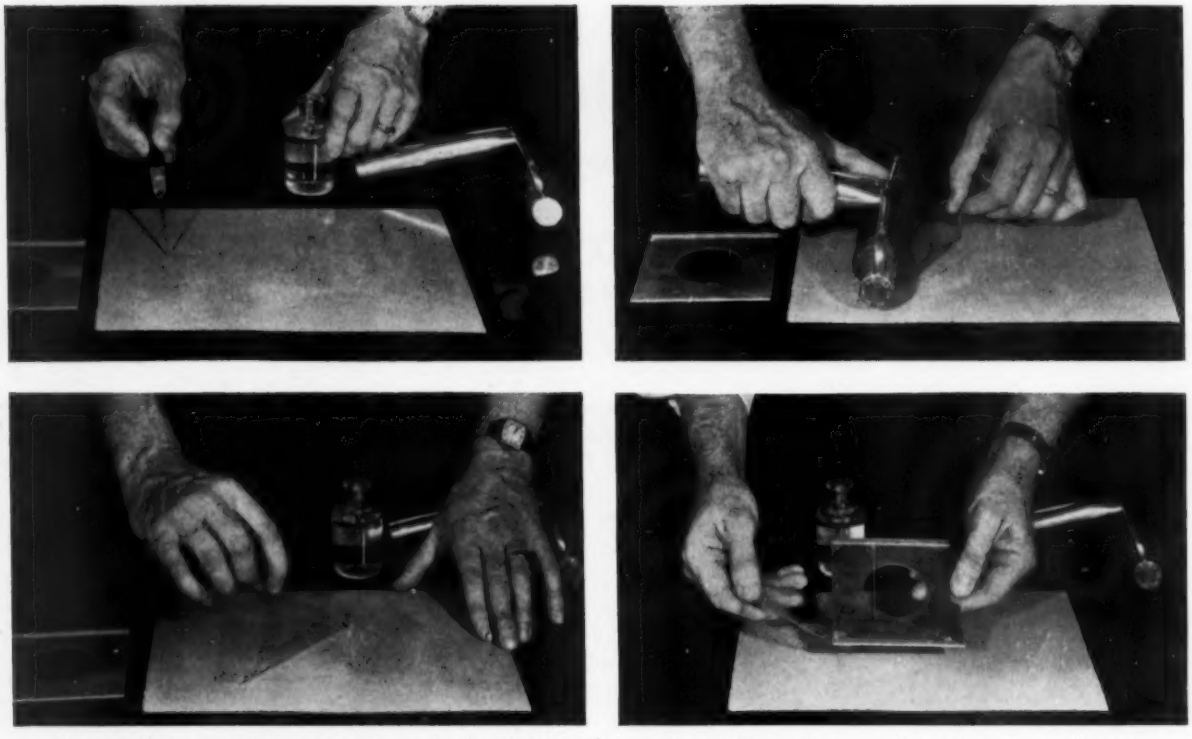
The surface texture of an enamel has an important effect upon the appearance and utility of an enameled article. For most uses, the high gloss usually associated with porcelain enamels is desirable from a standpoint of appearance, and the smooth surface enhances the ease of cleaning. However, for other uses such as architectural panels, semimat finishes may have an advantage from the standpoint of appearance.

Most enamels, if properly applied and fired, have smooth fire-polished surfaces. Surface defects may arise, however, from improper application or firing of the enamel or from other causes. Measurement of surface texture would aid in evaluating surface defects as they occur in the plant. Moreover, a simple quantitative method for measuring this property of enamels should find wide use not only in the plant, but also in the laboratory and field.

When the surface of a typical enamel is abraded, etched, or exposed to the weather, it is roughened, the gloss is reduced and, in the case of dark colored enamels, the reflectance and color may undergo large changes. Also, the tendency of the surface to pick up and retain dirt is increased. These properties may be considered the major ones for most uses, although other properties of the enamel are affected. The relative importance of these effects will depend upon the characteristics that are considered paramount in any given service. Laboratory tests for resistance to abrasion and attack by acids or

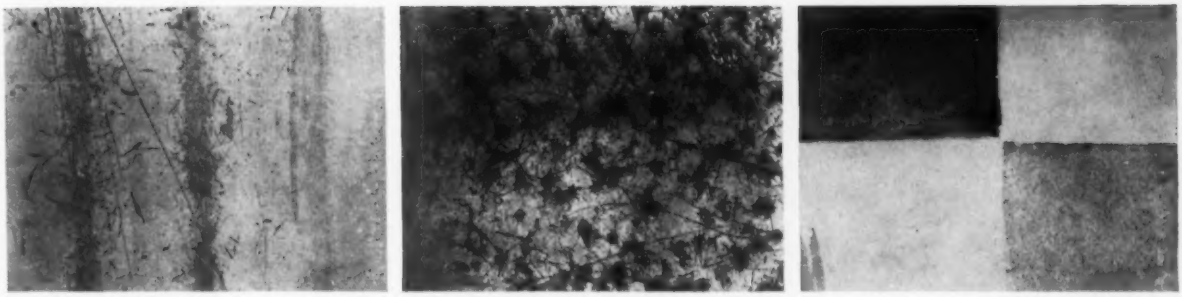


The plastic-replica technique makes it possible to study the progressive breakdown of an enamel surface in service. A series of replicas of this laboratory sink surface during a service period will allow the investigator to follow the progressive roughening of the surface due to abrasion and solution of the enamel.



Above: Shown are the principal steps in the plastic-replica technique for evaluation of surface texture of porcelain enamels. After an ethyl-cellulose solution is placed over the test area, it is spread and pressed onto the surface under a 4-inch square plastic sheet by means of a rubber roller. When dry, after a few minutes, the replica is stripped from the surface and placed in a metal holder to prevent its curling on further drying. Such replicas, which are faithful reproductions of surface texture, reveal details not readily visible in the original surface.

Below: The replicas are evaluated by measurements made with a haze meter. Here a National Bureau of Standards engineer is inserting a replica (in metal holder) into the instrument prior to measuring the light transmitted by the specimen. The replica is then shifted to similar slots at the other end of the instrument (left) and the measurement repeated. From these data the haze is computed.



The above replicas of porcelain enamel surfaces abraded and etched in service were among those studied. Left: print from a replica of the corrugated drainboard of an enameled cast iron sink. Above: print from a replica of an enameled table top. Right: print from a replica of a specimen exposed to weathering for six years; an enamel of poor weather resistance, upper left and lower right, was coated with dust coats of two clear acid resistant enamels (upper right and lower left), prior to exposure to the weather.

alkalis are usually designed to reproduce under controlled conditions the mechanisms that damage the enamel in service. Therefore, quantitative measurements of surface texture should be valuable for evaluating and correlating the results of laboratory tests with performance in service.

Preparation of plastic replicas

Plastic replicas of porcelain enamel surfaces are prepared by the following procedure: A solution is prepared by dissolving one gram of ethyl cellulose in 100 ml of a solvent composed of 80 parts of toluene to 20 parts acetone by volume. In making a replica a small amount of this solution is placed near one edge of the test area. This solution is spread and pressed onto the surface of the specimen under a 4-inch square sheet of ethyl cellulose (0.0075 inch thick) by means of a rubber roller. After drying for a few minutes, the replica can be easily stripped from the surface. There is a tendency for the replica to curl on further drying, hence it is usually placed in a metal holder immediately after stripping.

Specimens of 25 enamels given surface abrasion test

As a part of the Bureau's investigation, specimens of 25 enamels, submitted by the Porcelain Enamel Institute as representing a wide range of abrasion resistance, were given the standard (1942) PEI surface abrasion test. This test is based on the measurement of the loss in 45° specular gloss of the specimens produced by a standard surface abrasion treatment. Replicas from the abraded specimens were then rated by means of haze measurements, that is, the amount of light diffusely transmitted by a specimen, expressed as a percentage of the total transmission. One representative specimen of each enamel was selected, and the 25 specimens were ranked visually by seven observers in order of their apparent resistance to the abrasion treatment. Replicas of the 25 specimens were also ranked visually in the same manner, and by means of haze measurements.

Ratings by visual estimates and by haze measurements show close agreement

Comparison of the different methods of rating the 25 enamels revealed that there was excellent agreement between the ratings of replicas as obtained by visual estimates and by

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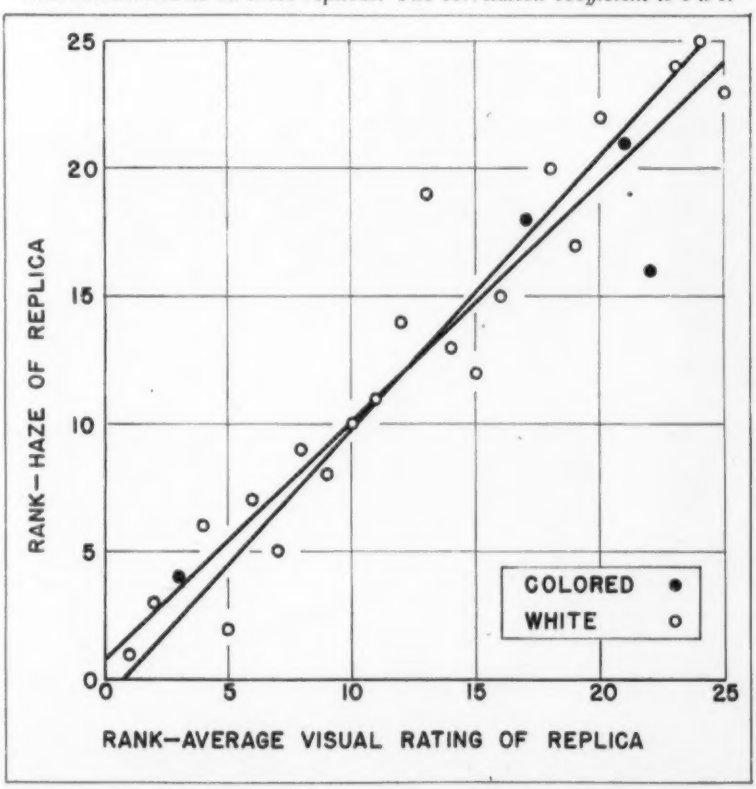
Chart shows the comparison of the ranks obtained by visual estimates of the amount of damage produced by the abrasion test on 25 enamels, as seen in replicas taken from the specimens, with similar ranks obtained by haze measurements on these replicas. The correlation coefficient is 0 .94.



Saving $7400 a year in packing costs

plus the virtual elimination of "hidden damage" to packaged water heaters

By C. W. Huber Jr. • ASSISTANT GENERAL MANAGER, PHILADELPHIA ELECTRICAL AND MANUFACTURING COMPANY

Exclusive feature finish

Our company manufactures the Pemco line of electric water heaters, and in this connection we have the normal packaging and shipping problems related to the delivery of an appliance of this type. As a result of research and development work in connection with our packaging and shipping problems, we have learned that ordinary crating and shipping damage to vitreous enameled and baked enameled products can be largely eliminated.

For over a year, Pemco heaters have been going to market with absolutely no "hidden damage" and practically no shipping damage at all. At the same time, the company is enjoying appreciable packing room economies which I estimate to be netting us a saving at the rate of $7,400 a year compared to old packing methods.

Our line of electric water heaters for homes and institutions ranges from 10- to 120-gallon capacity, including several attractive 30-gallon table-top types whose tops are vitreous enameled and whose cabinets, like the outer jackets of the traditional round models, are finished in baked enamel.

Our company formerly used shipping containers that required many nails and that hid the product. We encountered considerable "hidden damage," including occasional puncturing of the water heater casings by nails and frequent scratching of the finish. Besides being costly, the situation irritated distributors who received the damaged goods.

About a year ago, our company officials conferred with shipping container engineers, who designed on scientific principles the sturdy, highly-protective, shock-absorbent crates now in use. Results in elimination of damage as well as in packing room economies have been far greater than were even hoped for.

The one-piece wrap-around "mat" of this three-piece shipping crate has been folded into shape around a 30-gallon table-top type Pemco electric water heater with vitreous enameled top. The intermediate cleat of the "mat" was covered at the crating end of the assembly line with a soft insulating material for additional protection against marring the baked enameled finish. Vitreous enamel top is protected with a corrugated cap.

Crate bases bolted to heater legs

The larger type heaters, except the comparatively few 120-gallon ones, are assembled upon the crate bases which carry them in shipment. Bases are bolted to the legs of the heaters at the head of the assembly line. *The bases of crates for table-top types are attached at the end of the assembly line.*

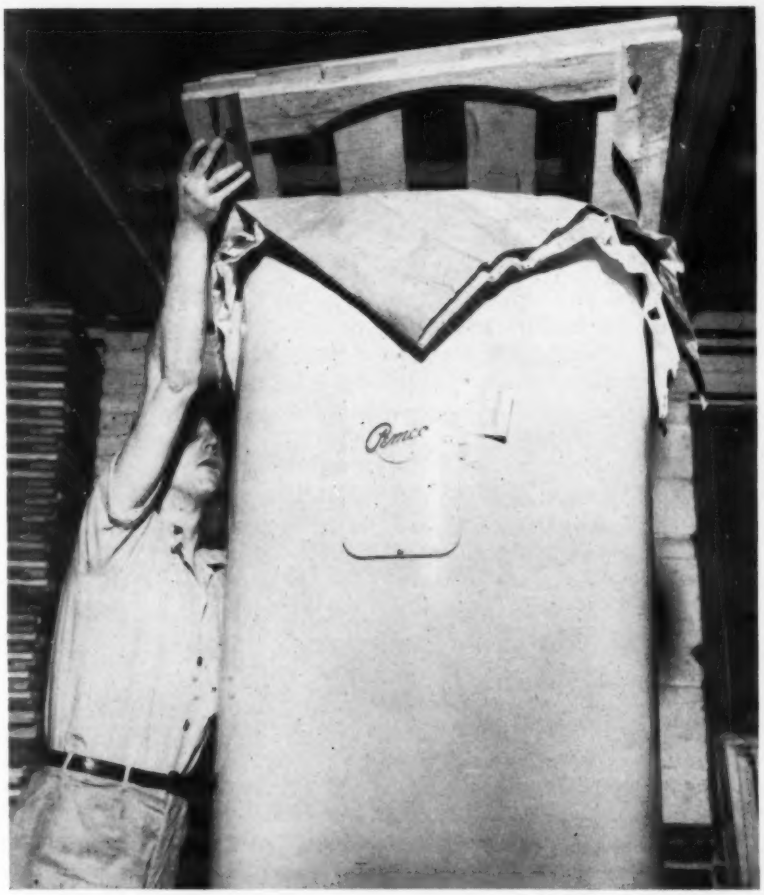
One of the surprising features of the crate used for the enameled table-top type heaters is the small amount of interior packing required. The vitreous enameled top is protected effec-

tively by heavy corrugated board. The intermediate cleats of the one-piece, wrap-around "mat" that comprises the four crate sides are covered at the crating end of the assembly line with protective cushioning material as an additional precaution against marring the finish of the heater. No other interior packing is required.

A one-man job

One man only is needed to crate the table-top types and most other models. After the base has been attached to the bottom of the table-top type heater, it is set in an upright position, the protective corrugated fold-up is placed on top, and atop that is placed the crate top. The wrap-around "mat" is quickly folded into shape and placed in position so that its top and bottom cleats, respectively, engage the outer edges of the crate top and base so as to exert slight pressure. The wire loop fasteners then are engaged and bent — and the crate is ready to be shipped, only 15 minutes after coming off the assembly line.

The added shipping protection given by the present packing method has been accompanied by a reduction of from 25 to 15 man-minutes required for crating.

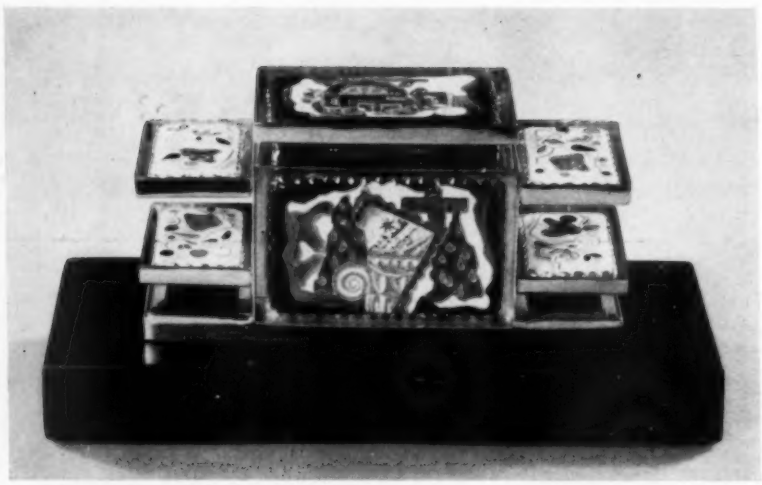


Above: Traveling along the assembly line on the base of a shipping crate, an 80-gallon water heater, taller than the workman and weighing nearly a quarter of a ton, arrives in the crating department. Here a workman has placed protective insulating material over the top of the heater and is placing the crate top in position. In this instance, the top was "custom designed" to fit snugly around the rounded top of the heater and assist in the elimination of shifting during shipment.

This view of the shipping room of the Philadelphia plant of Philadelphia Electrical and Manufacturing Co. shows some of the various sizes and shapes of water heaters that are produced and shipped regularly in these open-type containers.

Enamels win new art prominence

at annual Cleveland May Show



This gold box with gold cloisonne panels won for Kenneth Bates, of Cleveland, the first Horace E. Potter Memorial Award for Excellence in Craftsmanship. Mr. Bates is a member of the Cleveland Institute of Art faculty.

ENAMELS had a place of great prominence in the Ceramics Exhibit of the May Show of The Cleveland Museum of Art, with prizes going to many artists working in this medium.

First winner of award for "excellence in craftsmanship"

The first winner of the Horace E. Potter Memorial Award for Excellence in Craftsmanship is Kenneth Francis Bates who captured the medal with his Gold Box with Gold Cloisonne Panels, which he made on the commission of a group of Clevelanders. Colors are strong rich reds, blues, greens and yellows. Designs include motifs suggested by The Cleveland Museum of Art, The Cleveland Institute of Art, the Holden Arboretum and southwestern flowers. Mr. Bates, who is a member of the faculty of The Cleveland Institute of Art, put two hundred and forty hours of work on the object. The Cloisonne was built of 108 inches of gold ribbon-wire, which stands .003 of an inch high and is .006 of an inch wide. Decoration was formed by depositing layer upon layer of enamels on gold and silver foil. The box had fifteen firings.

First prize in enamels

First prize in enameling went to Doris Hall, a portrait painter who four years ago selected enamels as a medium with which to experiment. Her painter's quality in the pieces she does is characterized by brush-like freedom.

Other prize winners

Other prize winners in enamels include Edward Winter, Charles Bartley Jeffery, Herbert H. Starkey, Jack Tetalman, and Anthony Vaiksnoras.

In the Jewelry classification, all of the prizes excepting the first, which was awarded for a set of silver necklace, brooch and earrings, were awarded for enameled objects.

Accelerated interest in enamels

Although Ceramic Sculpture and stoneware pieces came in for their consideration, it seems quite evident that there is accelerated interest in enamel as a medium for art expression. An increase in the number of artists working with enamels, and a steady improvement in the quality of the work done must, of necessity, increase the appreciation of the general public for the fine qualities inherent in enamels.

Doris Hall, who selected enamels as a medium for her work four years ago, was awarded first prize in enamel-on-metal for her plate and two bowls.

National SAFE TRANSIT program expands

AT a meeting of the Coordinating Committee of the National Safe Transit Program at the Stevens Hotel, Chicago, on Monday, June 13, plans were laid for broadening the program in line with the original "Summary of Plan of Procedure" as published by the Porcelain Enamel Institute.

Projects I and I-A now operating

As reported in June *finish*, Projects I and I-A (covering industry's participation in the National Safe Transit Program) are gaining momentum with each succeeding week. Many manufacturers have agreed to install the necessary equipment or have the necessary pre-shipment tests conducted by certified laboratories, recognized independent testing laboratories, and the laboratories of container associations and container manufacturers are currently being invited to apply for certification. The simplicity of this pre-testing program for product manufacturers can be appreciated by reading the brief "procedures for testing" which follow.

Carrier and carloading programs to be correlated

H. J. Benzie, of General Electric Company, has been appointed as industry representative on the coordinating committee to establish a working committee to cooperate with the carrier associations. The work of this committee will be to correlate and publish the projects instituted by the carriers as a part of Project II of the National Safe Transit Program. It is expected that these projects will include improvement of facilities, and various types of educational programs for carrier employees who handle PACKAGED PRODUCTS in transit.

M. F. Weber, of American Stove Company, has been appointed chairman of a committee to develop Projects III and IV. Project IV covers research and correlation of basic loading information. The committee's responsibilities include plans for distribution of existing printed information and for the publication of constructive data resulting from research. Project III concerns the marking of cars and vehicles in which major appliances and allied metal products are carried.

Testing procedure for Project I

THIS procedure for Project I of the National Safe Transit Program, as developed by the Technical Planning Division of the National Safe Transit Committee, covers testing of packaged products weighing 100 to 1000 pounds as prepared for transportation, and supersedes all previous procedures.

Test cycle shall consist of:

1. Vibration Test
2. Impact Test

Tests shall be conducted in the above order.

Vibration test equipment

L.A.B. Package Tester or other equipment producing equivalent results.

Test procedure

The packaged product shall be placed on the table of the vibration tester; fences may be attached to the test table suitable for the product being tested. Vibration frequency shall be such that the packaged product leaves the table momentarily at some interval during the vibration cycle (equivalent to acceleration of "1g+"). The test shall be conducted for a minimum of one hour.

Note: A simple method of determining "1g+" is to advance the cycle of vibration until a thin piece of cardboard can be inserted under one bottom edge of packaged product and the platform of the machine.

The packaged product shall be considered to have satisfactorily passed the test, if after one hour the product shall be free from damage and the container and inside packing afford necessary protection for transportation.

Impact (longitudinal shock) test equipment

The Conbur Incline testing device or other equipment producing equivalent results.

A shock recorder known as RS two-way recorder No. 2W 330.

Test procedure

The container to be tested shall be placed on the dolly with the face or edge which is to receive the impact projecting two inches beyond or flush with the forward end of the dolly. The dolly shall be brought to the predetermined position on the incline and released. The position shall be such as to produce impact into at least the 1st quarter of the 5th zone of the shock recorder. The shock recorder shall be positioned on the packaged product to record the maximum shock received during the impact test. The dolly and container shall be drawn up the incline to the predetermined position and released. The position of the container on the dolly and the sequence in which the faces or edges are subjected to impacts may be at the option of the manufacturer and will depend on the packaged product under test.

The packaged product shall be considered to have satisfactorily passed this test, if the product is free from damage and the container and inside packing afford necessary protection for transportation.

When the manufacturer is shipping from production runs complete

test cycle should be run daily.
The number of Packaged Products to be tested is left to the judgment of the manufacturer; however, the sample should be sufficiently large to assure valid results.

Note: For a complete description of instruments and equipment see "Project I. Test Equipment and Procedures, a Report of the Technical Planning Division, Attachments No. 1 to 4, which can be obtained from the Porcelain Enamel Institute, 1010 Vermont Ave., N. W., Washington 5, D. C. Price 50 cents.

Testing procedure for Project I-A

THIS procedure for Project I-A of the National Safe Transit Program covers testing of packaged products, both single and multiple packed, weighing under 100 pounds as prepared for transportation.

Test cycle shall consist of:

1. Vibration Test
2. Drop Test

Tests shall be conducted in the above order.

Vibration test equipment

L.A.B. Package Tester or other equipment producing equivalent results.

Test procedure and performance limits

The packaged product shall be placed on the table of the vibration tester; fences may be attached to the test table suitable for the product being tested. Vibration frequency shall be such that the packaged product leaves the table momentarily at some interval during the vibration cycle (equivalent to acceleration of "1g+"). The test shall be run for a minimum of one hour.

Note: A simple method of determining "1g+" is to advance the cycle of vibration until a thin piece of cardboard can be inserted under one bottom edge of the packaged product and the platform of the machine.

The packaged product shall be considered to have satisfactory passed this test, if after one hour the product shall be free from damage and the container and inside packing afford necessary protection for transportation.

Drop test equipment

The apparatus shall consist of the following:

(a) Divided table top drop tester such as Acme Drop Tester or other equipment producing equivalent results.

(b) Hoist with suitable sling tripping device. Surface on which package is to be dropped must be flat and of a firm base.

Test procedure and performance limits procedure

The procedure for identifying faces, edges and corners of containers shall be as follows:

(a) Facing one end of the container, with the manufacturer's joint, if any, on the observer's right:
Designate the top of the container as one.
The right side as two.
The bottom as three.
The left side as four.
The near end as five.
The far end as six.

(b) Identifying edges by numbers of two faces that form that edge:
Example:
1-2 identifies the edge formed by the top and right side.
2-5 the edge formed by the right side and the near end.

(c) Identifying the corners by the numbers of the three faces that meet to form that corner.
Example:
1-2-5 identifies the corner formed by the top, right side, and the near end.

The packaged product shall be dropped from the prescribed height in the following sequence which constitutes a drop test cycle:

(a) A corner drop on the 5-1-2 corner.
(b) An edge drop on the shortest edge radiating from that corner.
(c) An edge drop on the shortest edge radiating from that corner.
(d) An edge drop on the longest edge radiating from that corner.
(e) A flatwise drop on one of the smallest faces.
(f) A flatwise drop on the opposite smallest face.
(g) A flatwise drop on one of the medium faces.
(h) A flatwise drop on the opposite medium face.
(i) A flatwise drop on one of the largest faces.
(j) A flatwise drop on the opposite large face.

Performance limits

1. Weight of Packaged Product—50 pounds and under. Articles—Single or multiple packaged products such as washing machine tubs, table tops, stove panels, etc. Drop—24".

1a. Weight of Packaged Product—Over 50 pounds and under approximately 100 pounds.
Articles—As in 1.
Drop—12" minimum or 72" on Conbur (optional)*.
(Note: See Attachment 5 in Proj. 1a booklet for description of Conbur.)

2. Weight of Packaged Product—50 pounds and under.
Articles—Completely assembled products (and allied parts) such as roaster, cookers, hotplates, etc.
Drop—18".

2a. Weight of Packaged Product—Over 50 pounds and under approximately 100 pounds.
Articles—As in 2.
Drop—12" minimum or 72" on Conbur (optional)*.

3. Weight of Packaged Product—50 pounds and under.
Articles—Holloware.
Drop—12" minimum.

3a. Weight of Packaged Product
—Over 50 pounds and under approximately 100 pounds.
Articles—As above.
Drop—12″ minimum or 72″ on Conbur (optional)*.

*If the use of Conbur Incline Testing Device is elected, the sequence of the test will be as described under Drop Test.

The packaged product shall be considered to have satisfactorily passed this test, if the product is free from damage and the container and inside packing afford necessary protection for transportation.

Frequency of complete test cycles

When the manufacturer is shipping from production runs complete test cycle should be run daily.
The number of Packaged Products to be tested is left to the judgment of the manufacturer; however, the sample should be sufficiently large to assure valid results.

Note: For a complete description of instruments and equipment see "Project IA. Test Equipment and Procedures, A Report of the Technical Planning Division. Attachments No. 1 to 5, which can be obtained from the Porcelain Enamel Institute, 1010 Vermont Ave., N. W., Washington 5, D. C. Price 50 cents.

Packaging exposition most successful in 18-year history of event

THE annual National Packaging Exposition and the concurrent Conference on Packaging, Packing and Shipping, held in Atlantic City, May 10-13, was the most successful in the 18-year history of the event from the standpoint of both those who attended and those who exhibited, Lawrence A. Appley, president of the American Management Association which sponsored the 1949 show, said at the conclusion of the Exposition.

He pointed out that the total registration of 11,000 individual visitors to the Exposition was 1,700 more than the last time the Exposition had been held in Atlantic City and that the 207 exhibiting companies set an all-time record for the show.

Appley stated that AMA was pleased by attendance of 1,000 executives at the conferences inasmuch as several sessions were held during hours when the Exposition was also open. He said that attendance of 400 at a concurrent session devoted to technical developments was a record for such a session, and that attendance at other sessions had also been higher than had been anticipated.

At the outset of the Exposition some of the exhibitors had expressed some doubt that sales volume in the industry could be maintained at its present level during the next year. After the show the doubt had been largely replaced by optimism, he said.

An executive of one of the country's leading package and materials testing laboratories reported many of the speakers at the AMA Conference discussing and commenting favorably upon the National Safe Transit Program sponsored by the Porcelain Enamel Institute. It is very evident, he said, that there is an increasing appreciation throughout industry of the importance of pretesting packaged products and the establishment of performance standards.

Excerpts from discussions

The following are a few brief excerpts from discussions by speakers before the packaging conference.

E. S. Petze, staff materials control engineer, Scott Paper Company, said: "Our specific application of 'Performance Standards' to shipping containers may be looked upon as a new approach for our particular type of products. However, as many of you know, a similar method of measurement evaluation has been used by soap manufacturers; the glass industry has determined the Drop Test to be the most significant criterion; and the Porcelain Enamel Institute has recommended the Conbur and L.A.B. Vibrator" *(Also, the drop tester)*.

Jerome F. Gould, president, Acorn Packaging and Packing Corp., in discussing the packaging of heavy products for export said: "It has been estimated by competent authorities that losses in our exports due to improper packing in 1947 amounted to from 750 million to a billion dollars. It is estimated that in 1948 a like amount of loss was suffered by American foreign traders. As a result of this tremendously high loss level due to improper packaging a considerable protest has been raised by various interested people throughout the country. . . .

"There is one fact whose confirmation is already established. There are substantial and important losses in American exports being sustained every day due to inadequate and improper export packing. The time to act is not six months or a year from now, but today!"

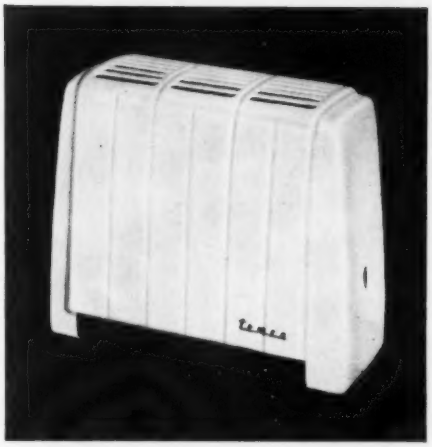
E. H. Balkema, purchasing department, Colgate-Palmolive-Peet Company, in a discussion of container quality measurement, said: "There are, however, certain restrictions placed upon both the manufacturer and the buyer, such as Rule 41 which provides for example, a Mullen Test. In my opinion, the *Mullen Tests* of the board *bear no direct relationship to the ability of the case to withstand rough handling and properly protect its contents* except in the case of cans or other similar merchandise.

"If you are one of the big companies and you have your own testing facilities, you probably have a testing procedure which is similar to ours and you are not experiencing too many difficulties.

"If, however, you are one of the companies which do not have their own testing facilities, then you may

to Page 69 →

Space heaters and floor furnaces are porcelain enamel finished



AMONG a growing number of manufacturers of gas-fired heaters who use porcelain enamel as the all-around finish for their products is Tennessee Enamel Manufacturing Co., of Nashville, Tenn. Two new gas-fired Temco products, a space heater and a floor furnace, are shown on this page.

Temco's new gas floor furnace, which measures only 25½" over-all depth, is equipped with a porcelain enameled heat chamber which will not rust, corrode, or burn out. The ceramic surface treatment on the heat chamber is of the type developed by the National Bureau of Standards for use on aircraft power plants.

The new model floor furnace provides a recessed, easily accessible, compact control assembly which greatly simplifies installation and maintenance. A ceramic port burner is incorporated to further improve the efficiency and lasting quality of the unit. Standard equipment includes safety pilots. Automatic electric temperature controls are also available. Temco's line of new gas floor furnaces includes 35,000, 50,000 and 70,000 Btu models.

In Temco's line of gas space heaters, simplicity and compactness are the rule. The porcelain enamel finish, not being affected by heat, makes possible the use of unusually small cabinets.

The unvented line is made up of three radiant models: 12,000, 20,000 and 30,000 Btu capacities. The non-radiant circulators consist of units having 20,000 and 30,000 Btu ratings. There is one vented model in this new group of heaters which is rated at 12,000 Btu. Non-functional trim and conventional mica fronts have been eliminated on all models.

Tennessee Enamel was organized in 1921. The firm's present line of products, in addition to space heaters and floor furnaces, includes signs, stove parts for other manufacturers and table tops.

Temco's fabricating facilities make it possible for them to tackle practically any metal forming job required in their production cycle. Equipment is available for die making, forming, welding, and assembly of finished products.

Metal cleaning is accomplished by processing through a batch type pickle room. Following pickling, ware passes through a room-type steam-heated drier.

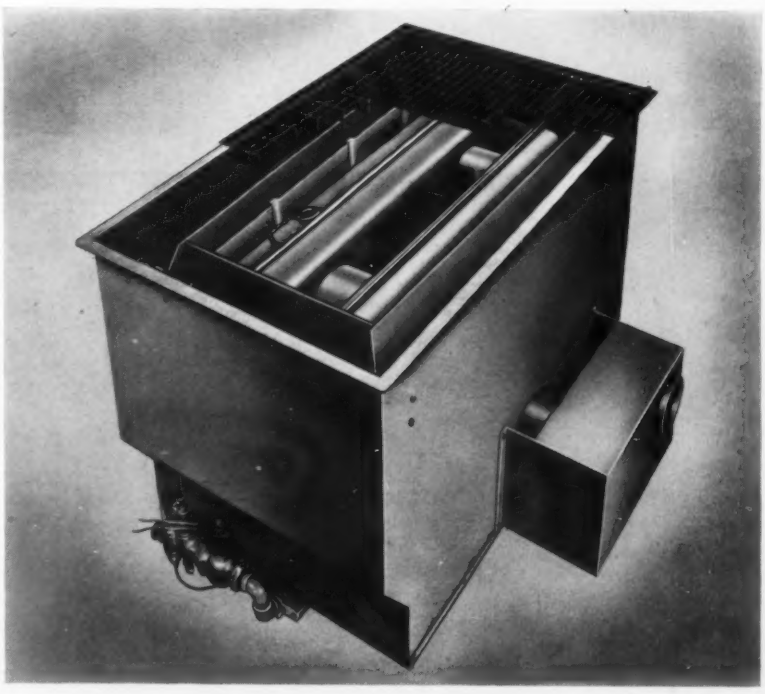
Ground coat application is by spraying, except for inner parts of heaters and ranges which are dipped. The ground coat spray line consists of one hand spray booth for application of ground to the backs of certain parts, one automatic spray booth for spraying the tops of ware, and two hand spray booths for edging or reinforcing.

All cover coat is applied by spraying. The cover coat line equipment is practically a duplicate of the ground coat line. Convection drying is used on both automatic spray lines.

Two continuous and two box type furnaces are used to fire Temco's porcelain enameled ware. One continuous furnace is 120 feet long with a 36-foot firing zone; the other continuous furnace is a U-type with a 28-foot firing zone.

The mill room contains six mills—one 2400-pound, two 1200-pound, one 700-pound, and two 350-pound mills. Because of Temco diversified production, storage capacity for milled enamel is large, consisting of 30 storage tanks, 20 of which have a capacity of 200 gallons each, and 10 with 400 gallons each.

Temco's current expansion program will considerably enlarge its present manufacturing space of 160,000 sq. ft.

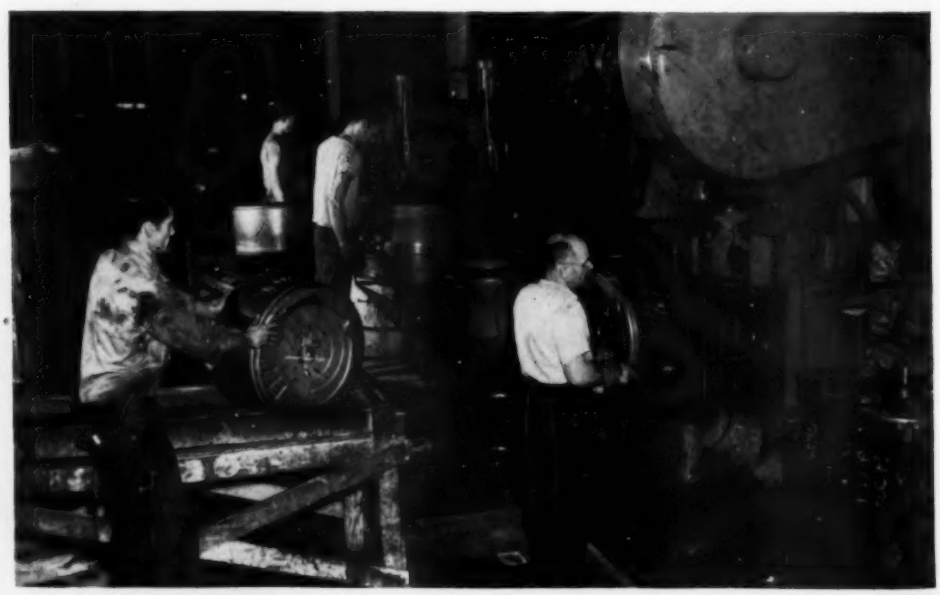


Left: The tub's top edge is curved and shaped in this neck roll machine. This is the first rolling operation in a sequence of three.

THE first part of this story, published in the June issue of *finish*, contained a description of plant routine and a photo story of sink and bathtub production at the Ingersoll-Steel plant in the West Pullman district of Chicago. This second part is a photo story of washing machine tub production which was also described in June *finish*.

Fabrication, metal preparation, enameling
—sinks, bathtubs and washing machine tubs

Part II—a photo story of washing machine tub production at Ingersoll-Steel



Right: The first press operation, right to left, in this line pierces the wringer holes, followed in close order by the first Yoder roll to invert the flange, and the second Yoder roll to curl the flange under.

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Left: In this three-die press, the first operation is the first draw of the tub, second for the redraw, and third for forming the tub bottom.

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Above: Operator washes tub to clean off the dry-type drawing compound before the tub is annealed with a gas flame at a temperature of 1600° F.

Right: Ground coat dipping area in background. Operator at left blows out tubs with compressed air. Girl operator in right background is siphoning excess enamel from inside the bead, and operator in right foreground is beading the top rim.

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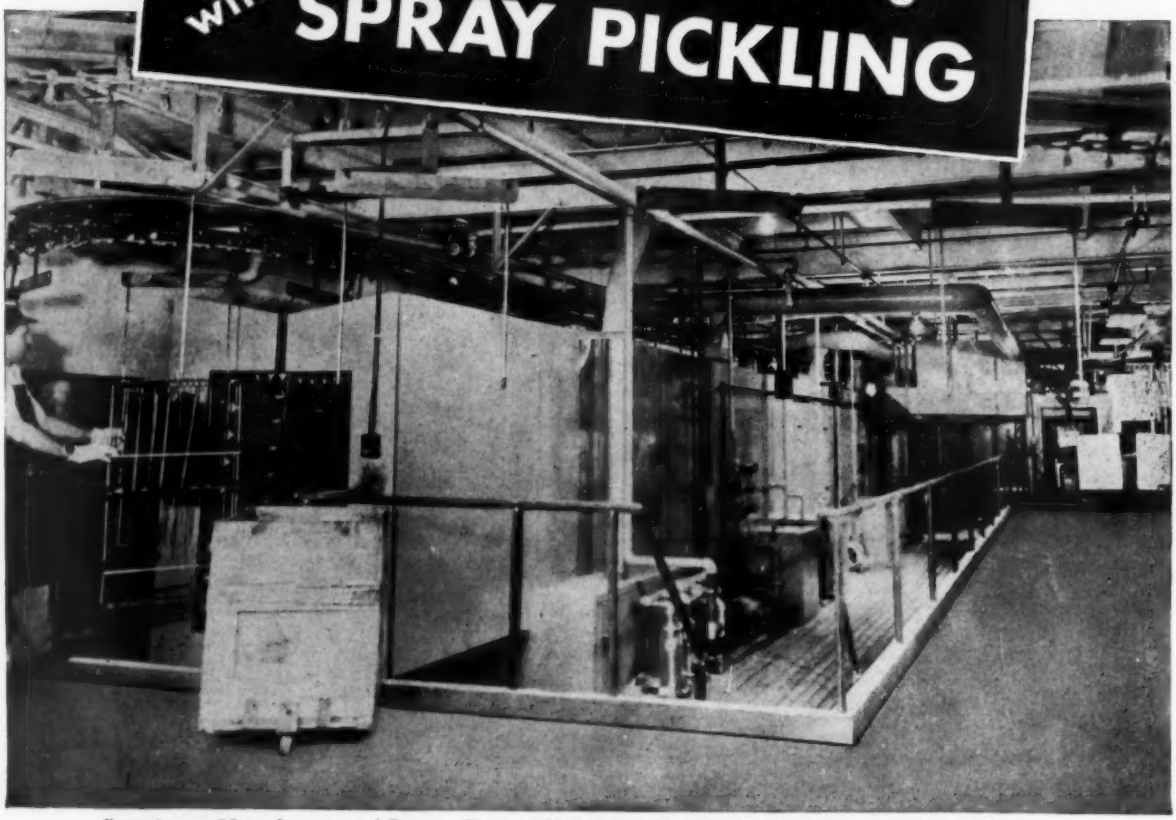
Better Porcelain Enameling with SPRAY PICKLING



Prominent Manufacturer of Ranges Uses a METALWASH SPRAY PICKLER - Mighty Satisfactory

5 ADVANTAGES OF METALWASH SPRAY PICKLERS

- ***First*** — **Fully automatic machinery washes, rinses, pickles, nickel coats, neutralizes and dries all in one operation.**
- ***Second*** — **The exact cycle is automatically controlled, eliminating "human error."**
- ***Third*** — **Spray pickling is much more effective, spray rinsing more thorough and the ware does not dry between the stages of the cycle.**
- ***Fourth*** — **METALWASH spraying methods provide a continuously uniform deposit of nickel of thickness recommended by good practice, thus greatly improving adherence.**
- ***Fifth*** — **Special housing design and effective exhaust venting eliminates obnoxious fumes and vapors.**

Contact METALWASH Corporation for Better Cleaning and Pickling prior to Porcelain Enameling.

METALWASH MACHINERY CORP.
149 - 155 SHAW AVENUE IRVINGTON 11, NEW JERSEY

ICHAM mid-year convention

cooking and heating appliance manufacturers study "changing economy"

OUR "changing economy" was the principal topic discussed by producers of cooking and heating appliances at their mid-year meeting held at the Netherland Plaza Hotel, Cincinnati, June 6, 7 and 8. More specifically, members of the Institute of Cooking and heating Appliance Manufacturers talked mostly about shrinking markets and consumer buying resistance.

They were told that "*business is still unusually good measured by any standard,*" and that most of their trouble today, due much in part to lethargy in the sales departments, could be cured with some old fashioned "doorbell ringing" salesmanship. Though "price cutting" was ventured as one answer to consumer sales resistance, it was apparent that salesmanship was the biggest factor influencing today's markets.

Ritzenthaler heads general session

A. B. Ritzenthaler, of Tappan Stove, and Institute president, was presiding officer at the general session on Tuesday morning, when subjects of general interest were discussed at length by well-known speakers.

In opening the session, Ritzenthaler discussed the shrinking market, stating that "My guess is that our market potential is at least thirty-five per cent lower than our productive capacity." He then pointed out that "the Institute meetings were planned so that the stove men could exchange ideas with other men who sell the same types of products and whose work is similar." He concluded "Our problem today is not to compete with each other, but to learn how we, as a group, can compete most effectively with other consumer durable goods industries to get our full share of the consumer purchasing power."

At the ICHAM general session, Louis Ruthenburg, president of Servel, Inc., told a capacity crowd of serious minded stove men that "for nine long years the arts of selling have not been practiced. . . . Today's salesmen and sales executives not only have lost their skill, but they will find all manner of excuses for not returning to their 'plows.' Moreover, our surviving prewar salesmen and sales executives are nine years older than they were in 1940, and the inactive years have taken a terrible toll.

Louis Ruthenburg finishfoto

Deterioration of retail selling manpower is a serious handicap

"Such disabilities afflict the entire distributive system — not only manufacturers' sales personnel, but that of distributors, jobbers, utilities, and retailers. The deterioration of retail selling manpower as to both quantity and quality is one of our most serious handicaps."

Ruthenburg concluded that the present buyer's market "will evolve into a healthy normal market much sooner if we succeed quickly in reviving the lost arts of sales management, sales organization and salesmanship, and support that revival with adequate, hard-hitting top management assistance. That means marshalling behind sales every element of effective striking power of a revitalized, well-integrated organization. *That means assisting sales with adequate appropriations and advertising support.* It also means the direction of management effort toward relieving sales of such handicaps as bureaucratic credit and discriminatory tax loading."

The vitality and stamina of the American economy

"Many business and government leaders alike have grossly underestimated the vitality and stamina of the American economy," Vergil D. Reed, associate research director of J. Walter Thompson Company, told the general session capacity crowd. "We heard loud wails about unemployment reaching 10,000,000 to 12,000,000 during our post-war reconversion period. The maximum was 2,700,000. . . . The number of people employed was greater in December, 1948, January, February and March, 1949, than in the same months a year ago. . . .

"The present period of recession, reflation, disinflation, readjustment, or any other fancy name you wish to give it, is not only a natural but a desirable happening which we should welcome and ride out rationally with thanksgiving that it was not delayed longer. . . .

"While some further drop in prices must be expected, there is certainly no reason or cause for any depression even approaching the severity of that from 1920-21 when prices fell suddenly and far. . . . The retail price index actually rose very slightly in both March and April. . . .

"*Business is still unusually good measured by any standard.* Now that June is here and none of the dire forebodings of January have come true, it is time we face the facts — and they are very encouraging," emphasized Reed. →

"The temporary reluctance of both business and consumers to spend money is the biggest and blackest cloud in our economic sky. So far this decline in retail sales and business buying is small and is bringing a slow drop in many prices. However, purchasing power is abundant

finishfoto

Vergil Reed

and widely spread. This is a waiting for better values, and postponed buying plus ample purchasing power spells greater demand when better values are offered. . . .

Demand is practically insatiable

"Demand is practically insatiable, given purchasing power and the desire to use it." (Creating that "desire" is the job of salesmanship.)

"New orders are down in many industries, but why shouldn't they be? Is it reasonable that we go on indefinitely, and with no breathing spells, beating the highest productions and sales records in history. . . . "

In discussing today's changing economy, Reed stated that one of the specific and immediate things to be done is to reduce prices. "If prices are reduced to show better values, volume will remain high. You have a choice between keeping present prices with reduced volume, and lowering prices and margins to maintain volume, with the resultant maintenance of high employment, and finding offsetting increases in efficiency. . . . These cuts must follow, and at times precede, lower prices of materials, more regular supply, and increases in efficiency. It is far better to lead than to follow in such reductions for the leader gets the greatest benefit in his public relations and advertising. . . .

"To clear high cost inventories you have the choice of taking (price) cuts, or sending your own salesmen out to help the dealers move them quickly before even lower cost merchandise comes into competition. . . .

The productivity of labor

"You are worried about the productivity of labor. I think that the greater selectivity of labor you can now exercise will solve that problem in two ways. First, you can choose the better trained worker. Secondly, the chosen workers will be more easily convinced that if they are to retain their jobs your company must be in a position to give the values and prices which mean steady jobs and increased real wages. . . .

Room for standardization

"There's still plenty of room in your industry for gains from standardization. With some 200 kinds of gas valves and 200 different settings on oil valves for your stoves, and with a whole galaxy of tensile strengths demanded in your steel sheets, you must be pretty tough customers for your suppliers. . . . "

Reed pointed out the following as some of the bright spots in the market picture: over 16,000,000 increase in population since 1940. . . . customers living more than 25 years longer than those of grandfather's time. . . . the war bonus of an extra 5,000,000 babies who will add much to the market potential in the 1960's when they marry and establish new homes. . . . many millions, including 14,000,000 service men, attained new standards, tastes, preferences and desires when they were uprooted from old environments and standards of living during the war.

The speaker then pictured the monetary scene as follows: personal incomes still running higher than a year ago. . . . liquid assets of individuals (stored up purchasing power) is three times that of 1940. . . . real purchasing power (corrected for higher taxes and price inflation) is 54% higher than in 1940. . . . consumer debt could be increased 60% without exceeding the 1940 ratio to disposable income. . . . farm mortgages at lowest level since beginning of first World War. . . . private capital outlays for the first quarter of this year was 12% above those a year ago. . . . the stock market is thoroughly deflated in sharp contrast to the rampant inflation of 1929.

In conclusion, Reed said "Markets are people with money to spend — and the desire to spend it. We

Cincinnati Conservatory of Music group entertained at ICHAM banquet.

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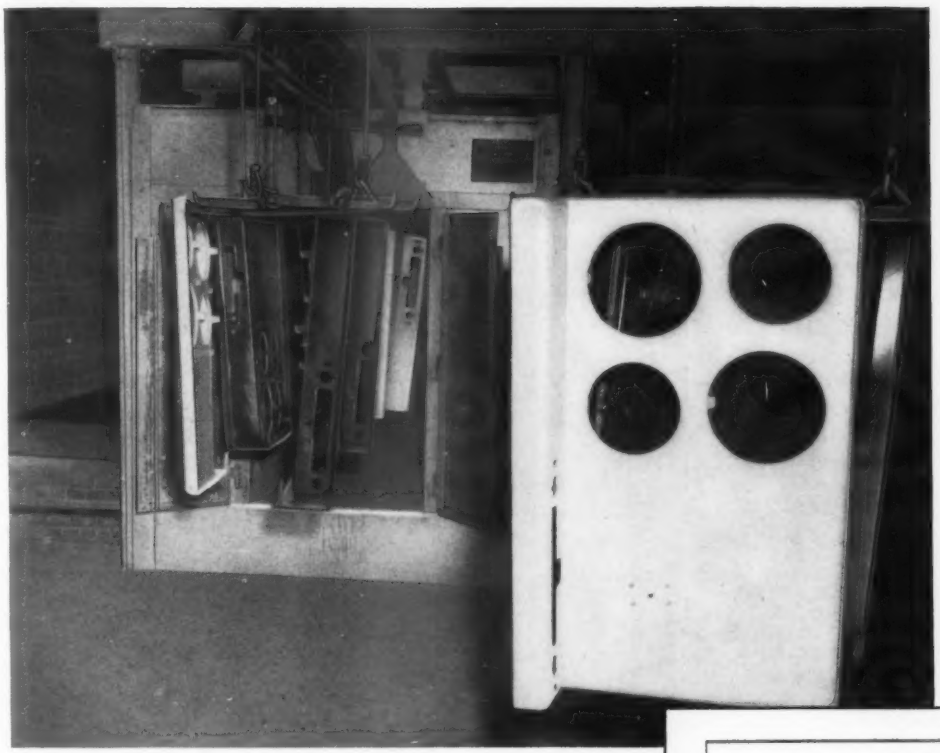
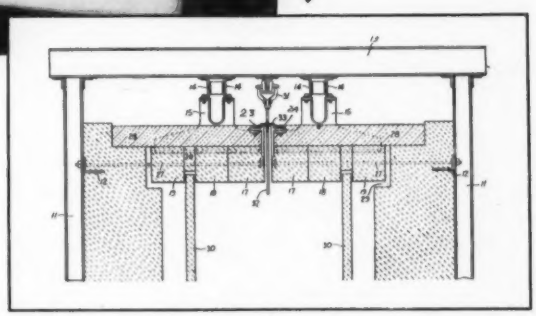


Photograph shows a Boland continuous furnace in the plant of Rutenber Electric Co., Marion, Ind., producers of Marion electric ranges. ←

This drawing shows the patented "Floating Roof" construction which is standard with all Boland built continuous furnaces. ↓



More ware per hour
with BOLAND
"Single Flow" Furnaces

You will get more finished ware per hour, per week, and per year with Boland "SINGLE FLOW" furnaces. The STRAIGHT AWAY design, with wide radius turns, provides for maximum loading of the conveyor chain at all times.

What's more, you will get better quality ware consistently — ware that is fired evenly from top to bottom, and both front and back. Boland furnaces provide a combination of pre-heat and firing zones designed for the most uniform firing of all types of porcelain enameled products.

And, don't forget the Boland patented "FLOATING ROOF." Built like "Gibraltar," this construction provides a permanently smooth slot for conveyor travel. You can't go wrong with a Boland continuous furnace for the production of quality ware and for long furnace life.

Our counsel on furnace problems is free for the asking. You will find our bids on furnace construction attractive.

ALBERT J. BOLAND COMPANY

407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

Designers and Builders of Continuous and Box Type Enameling Furnaces

finishfoto

Left to right at president's reception and dinner in Pavillon Caprice are: Wm. J. Wildern, Detroit Brass; H. C. Fogle, Production Plating Works; R. E. Imoff, Detroit Brass; H. D. Fogle, Production Plating Works; F. C. Manss, Andes Ranges; and Earle B. Kaufman and Charles Glassman, Boston Stove Foundry.

have the people — 16,000,000 more of them than in 1940. They have more purchasing power than the manufacturers of any country could envision in their wildest dreams. Remember, however, that consumer purchasing includes the *desire to buy* as well as the ability to do so. Right there is where your job begins, and if you can't do it, after counting all your blessings one by one, then it's time to stop talking about the blessings of the free enterprise system, for enterprise has died and freedom will soon do so."

Marketing research

One of the most interesting division sessions was the one for sales, advertising, and marketing research executives, presided over by H. L. Clary, director of sales for Norge. Following a talk on pricing procedures and the Robinson-Patman Act by Pauline Dunckel, of ICHAM, a lively open forum on marketing research activities was conducted with Walter F. Muhlbach, director of distribution research for Florence Stove, leading the discussion.

The results which marketing research should produce, according to McCord, of Fiberglas, are as follows: (1) potential market, (2) type of market — low or high price, (3) best advertising approach, (4) character of competition, (5) percentage of market obtainable at various price levels, and (6) measurement of performance. . . . Hines, of Dearborn Stove, stated that marketing research was a "tool to gauge what we ought to do." He indicated that through marketing research a firm can find out which men are doing the best job and why. . . . Weaver, of Tappan Stove, said that "trading area statistics point out where items are sold, but are insufficient *(with part of industry reporting)* to form definite conclusions. We can gear our activities to possibilities, however, through use of trading area statistics."

The session was closed with a discussion of advertising programs in the present market, with Lloyd C. Ginn, of American Stove, leading leading the discussion. A show of hands indicated that cooperative advertising was increasing. A question on how to hold advertising production costs to a minimum without weakening the advertising program brought the following remarks: (1) get advertising ideas from consumers, (2) ask advertising suppliers to reduce prices — get competitive bids, and (3) repetition of ads is OK.

Management forum

The last feature of the general session program was a "management forum" at which well-known stove men discussed the business problems of their hypothetical stove company in the present "changing economy," with President Ritzenthaler as moderator. Executives of the hypothetical firm were: Top Management Official, F. H. "Dick" Guthrie, president of Newark Stove; Sales Manager, Cecil M. Dunn, vice president of Estate Heatrola; Financial Credits Manager, Samuel Dunckel, of ICHAM; and Factory Manager, H. J. Berman, executive vice president of Lindemann & Hoverson.

Also at the reception and dinner are, left to right: John R. McCord, Fiberglas; "Deke" Bond, Tuttle and Kift; Mrs. W. R. Crawford; Lloyd C. Ginn, American Stove; Mrs. J. R. McCord; Jack Ziegler, Wilcolator; Dick Crawford, Crosley; and Bill Biddle, Knox Stove.

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How International Harvester answers materials handling and product protection problems

(Continued from Page 22)

ments within its own section and to other interested sections. Within its own section, assignments may be made to die design, tooling, or machine tool engineers, or possibly to all three.

Sub-assignments are made to other interested sections of the research department. For example, the welding laboratory may approach the problem of welding instead of riveting. The metallurgical laboratories may examine the possibilities of material substitution and work out those substitutions. The foundry laboratory may begin the redesign of castings. Any research section that can make a contribution may be called upon.

Throughout the investigation, the Manufacturing Research Department will attempt to arrive at costs under manufacturing conditions—may even simulate production runs to ascertain costs. It will thus move gradually from a position of estimated costs to actual costs for the newer process.

Interim progress reports filed by the responsible section keep the department and company management informed of the whole project and overall costs encountered. When a solution has been found and proved practicable, a final report is issued containing the results of the experiment and detailing the new method of manufacturing.

Materials handling and product protection section

One of the important subdivisions of the complete Manufacturing Research Department is the one concerned with materials handling and product protection, which includes everything pertaining to packaging and shipping practices.

The organization of this division consists of: two supervisors, three materials handling research engineers, and eight technicians.

A total of 9000 square feet of floor space is provided for research into handling and protection problems and major equipment items include the following:

1. A spray booth large enough to accommodate most of the larger shipping containers.
2. A machine for making sample corrugated and solid fiber shipping containers.
3. A weatherometer for testing effects of sun rays and humidity on corrosion preventive compounds.
4. Drop testing equipment for testing the ability of containers to withstand shock.
5. A one-thousand and a five-thousand pound capacity vibration unit to determine the effects of constant vibration on the shipping containers as well as the product when shipped by railroads or truck lines.

Other equipment includes export box making machinery and a specially designed overhead hoist for drop testing crates too large, or too long, for the regular drop test equipment. An example of using the latter is for drop testing a 6′ crate containing a Harvester-thresher pickup attachment.

The Harvester program for testing packaged products seems closely related to the National "Safe Transit" Program, projected by *finish* and coordinated by the Porcelain Enamel Institute, because the basic tests which have been established as standard are essentially the same as those recommended by the Safe Transit Committee.

Actually, the company's product protection laboratory does not set up standard packaging practices for the products of the various IH divisions. It acts only in an informative and advisory capacity. The laboratory staff tests packaged products and recommends suitable protective packaging if necessary. If the testing procedures bring out product weakness, this information is passed on to the division manufacturing the unit.

An example — packaged household refrigerators

As an example, the Refrigeration Division, at Evansville, Indiana, produces an 8 cu. ft. refrigerator. At the product protection laboratory, staff members constantly work with the division to improve packaging and shipping methods for that refrigeration unit, and report findings to the division.

Harvester products can be shipped in wirebound boxes, steel strapped boxes, cleated plywood crates, or hinged corner crates. At present, staff members are investigating fully corrugated waterproof cartons and cleated corrugated cartons. Most of the crating and shipping cartons are purchased from outside sources on specifications based upon laboratory work.

Versatile pallet box

A depot pallet box has been designed for multiple uses. It may be used on the production line as a skid, or it may be used as a shipping pallet for sending parts to a branch house. At the branch house it is used as a bin. The box is collapsible and can be returned to the point of origin for further such usage. The company has some 100,000 such shipping and storage pallets, with an average life of 8 to 10 round trips each.

Product protection studied

Another section of the laboratory is devoted to studying and developing cleaning methods, rust preventives, etc. Experimentation is now being conducted on a method of blast cleaning machined parts with rice hulls and corn cob residue to preserve tolerances. Equipment in this section includes a salt spray test cabinet, controlled humidity cabinet, weatherometer, freezing unit, and a controlled oven for testing protective coatings.

Another laboratory section is given over to testing the properties of paper used in cartons. Equipment is available for testing basic weight, shearing, tension, bursting and tearing.

Courses for materials handling and packaging and shipping

Periodically, the Manufacturing Research Department conducts one-week courses for materials handling and packaging and shipping engineers from the company's divisions. For this course two materials handling manuals have been developed, in

addition to visual aids and classroom procedure.

In addition, the materials handling and product protection section is also charged with the responsibility of editing, publishing and distributing manuals and specifications which outline approved practices in its field. The section cooperates with all company product manufacturing works for which it acts as a service organization and clearing house for information.

The section maintains many outside contacts to insure breadth of view. For example, it works constantly with Harvester suppliers on common problems of shipments to and from company plants. The section also collaborates with the Association of American Railroads in originating, developing, and passing upon loading practices affecting Harvester products. One such practice concerns the use of templates which act as guides for the placing of securement blocks prior to loading tractors on cars with overhead cranes.

Drawing upon the materials handling research laboratory and section, the company's nine-man materials handling advisory committee, composed of representatives of each IH operating division, can guide the development of new standards for materials and methods covering materials handling, provide means by which all operating plants may realize the benefits of solutions obtained in other plants, eliminate duplication of effort in attacking problems, and eliminate pyramiding of costs in solving problems.

Dry-type drawing compounds for the deep drawing of sheet steel

(Continued from Page 23)

when sheet steel of varying types and quality had to be used, the dry-type lubricant has in some cases made it possible to successfully draw parts which could not be successfully fabricated with wet type lubricants. This latter condition has, of course, had its effect on the increased conversion to the dry-type compounds.

A summary of the advantages normally claimed for dry-type drawing lubricants when used for the deep drawing of sheet steel include the following:

1. Worthwhile reduction in scrap due to breakage and die scratches.

2. Reduction in die wear and die polishing.

3. A clean press room and easier inspection of both dies and work.

4. Reduced labor cost through reduction of handling blanks.

5. Worthwhile reduction in the amount of lubricant consumed.

6. Dry-type compounds are easy to remove from the fabricated part.

Adapted for finish *from a paper before the Central District Enamelers Club.*

Nickel dip practice and control for porcelain enameling

(Continued from Page 24)

measured by means of an electrophotometer. Both methods can be used for determining the nickel deposited on the conventional 2" x 2" samples, but Ikenberry and Canfield have proposed a method of actually sampling the ware in production without injuring the part.

The sensitivity and accuracy of the color reaction exceeds that of the gravimetric or volumetric methods in the hands of inexperienced personnel. The color method is unaffected by small amounts of copper and cobalt, the latter two interfere in the titration method.

Entire pickle line may affect uniformity of results

In order to obtain uniform results, some attention has to be given to the entire pickle line. The ware has to be clean as nickel will not deposit on dirty areas. The temperature and time the ware is in the acid influences the nickel pickup. In general, the nickel deposition increases with longer pickle. Some steels appear to be more sensitive to variations in acid pickle than others. It is advisable to control the strength, temperature and time the ware is in the acid tank.

The temperature of the rinse following the acid affects the amount of nickel deposited. If cold water is used, the amount of nickel is usually lower than if the temperature is the same as the nickel tank. This is no doubt due to the fact that the deposition of nickel at lower temperatures is very slow. Very often the temperature has to be raised or the time in tank increased with heavy loads or heavy gauges of steel if the ware is cold upon entering the nickel tank.

If cyanide neutralizers are used, it is advisable not only to check the strength but also the temperature. At higher temperatures the cyanide will remove some of the nickel coating. Some plants have experienced irregular results due to the fact that the temperature of the cyanide was allowed to fluctuate widely. The use of tank thermometers is advocated. Satisfactory results have been obtained around 120° - 130° F.

What determines the life of a nickel tank? Some say that when the deposition becomes irregular, dump the tank. This conclusion may be somewhat questionable when you review the numerous factors that influence the deposition of nickel. Work is underway to develop a test that will be more specific in telling us when to dump a tank.

Suggestion for "sample" size

As a control method, I favor the use of 2" x 2" samples to check the nickel deposition. They should be cut from the same sheet or heat and protected from dirt and rusting. Two samples are run together for check purposes. It is surprising how uniform the checks are even though the samples may be from widely different parts of the same sheet. Actual checks of the ware in process would not indicate uniformity of pickling because different steels pick up various amounts of nickel. Also, the deposit is not uniform on larger pieces.

It is important to measure the nickel deposited because as J. M. Zander states[7] "the determination of

the actual weight of nickel deposit provides an overall picture of the quality of the metal surface preparation job resulting from the combined effects of all the steps embodied in an established cleaning and pickling cycle."

1. James Pettyjohn, "Nickel Dip Treatment of Enameling Iron," Proceedings of the Second P.E.I. Forum, 56-61 (1937).
2. Dr. G. H. McIntyre, "Nickel Dipping," Proceedings of the Seventh P.E.I. Forum, 20-29 (1945).
3. "The Use, Operation and Control of Nickel Dip Bath in Preparing Steel Surfaces for Porcelain Enameling," J. M. Zander.
"Preparation of Metal for Porcelain Enameling," Joint Committee of Frit and Porcelain Enameling Sheet Manufacturers. P.E.I. Publication.
"A Manual of Porcelain Enameling," Ferro Enamel Corporation.
4. E. Wainer and W. T. Baldwin, "Nickel Flashing and Its Relation to Enamel Adherence," Journal American Ceramic Society, 28 (II) 317-326 (1945).
5. L. C. Ikenberry and J. J. Canfield, "A Rapid Control Method for Nickel Coatings on Enameling Iron." Paper presented before the Enamel Division of The American Ceramic Society, April 25, 1949.
6. E. A. Brown and N. H. Stolte, "Determination of Nickel Deposition by a Colorimetric Method as Applied to Enameling Iron," The Enamelist, November, 1948.
7. J. M. Zander, "Present Day Need for the Determination of Weight of Nickel Deposit," Better Enameling, Vol. 19, No. 3, 6-8 (1948).

Adapted for finish *from a paper presented before the Central District Enamelers Club.*

Evaluation of porcelain enamel by a plastic-replica technique

(Continued from Page 27)

haze measurements. Ratings of the specimens by the PEI loss-of-gloss method agreed fairly well with ratings by visual estimates made on the specimens and with haze measurements made on replicas, taken from the specimens. Fairly good agreement was also obtained between the ratings by visual estimates made on the enameled specimens and similar ratings made on replicas. Perfect agreement would not be expected in these cases, since different but related properties are being evaluated. Poorer agreement was obtained between ratings by haze measurements on replicas and by visual estimates on the specimens themselves.

Although the roughening of the surface of an enamel by abrasion affects the appearance in several ways, the variable being evaluated by the use of replicas is limited to the single factor of surface texture. Hence, the haze measurements on replicas may provide a better criterion of the effect of mechanical abrasion *per se* than does the appearance of the specimens themselves.

The replica technique should find application wherever small-scale surface roughness is evaluated. It can be used to classify surfaces as mat, semimat or glossy, or to evaluate the degree of roughness developed in application of the enamel. It should lend itself readily to field inspections of enameled articles. Replicas made in the field can be examined by the investigator at his convenience, or sent to a central laboratory for study. A series of replicas of the same area of a test item, made before installation and after successive periods of service, will permit a study of the progressive breakdown of the surface. These replicas can later be compared with those from specimens treated in the laboratory to determine whether the laboratory test produces the type of damage observed in the field.

*For further technical data see "The Use of Plastic Replicas in Evaluating Surface Texture of Enamels" by J. C. Richmond and A. C. Francisco, Journal of Research, NBS 42,449 (1949) RP1985.

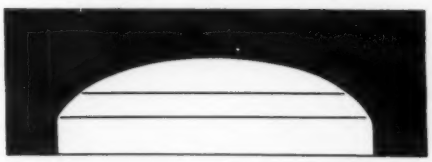
"It ain't that I need the money, lady; I just got to prove to myself that I'm a good salesman."

First plant maintenance show and conference, January 16-19

The plant maintenance show and conference to be held in Cleveland, January 16 through 19, 1950, is the first exposition of its kind devoted to installation, operation and maintenance of equipment and services in factories, warehouses and other plants, according to an announcement by Clapp & Poliak, Inc., exposition management.

Advance registration cards may be obtained by writing Clapp & Poliak, Inc., 350 Fifth Avenue, New York 1, N. Y.

Why don't you make your appliance tops this way



Instead of making them flat like this?

Here's why

You know the answer. You make the tops flat so that they can be used as *working* surfaces in the kitchen or laundry or utility rooms.

The tops are flat—yes—but will they stand up under the scratching, burning, wetting, hard wear that they should be designed to withstand?

You know there is only one "lifetime finish".

You know that *no other finish* can compete with porcelain enamel in maintaining its original beauty and cleanliness through years of hard service.

Do you realize that this is true? If not, drop us a line saying, "Show us." We shall be only too happy to *prove* it.

Plan... for the Lifetime Finish

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Lakefield NEPHELINE SYENITE

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IN THE FRIT Lakefield Nepheline Syenite will lower the smelting temperature or decrease the time of firing. It is effectively used to increase the alumina content of enamels without increasing their hardness.

IN THE ENAMELING PLANT Nepheline Syenite has been used for years as a ground coat mill addition (up to 15%) by many of the largest enamel plants in the country, with important resultant savings in the enamel batch. Due to the material's low melting properties, comparatively large percentages can be used without any change in molten viscosity or other good properties of the ground coat enamel.

If you are not using Nepheline Syenite in your ground coat, you should arrange for a trial run now. Wire or write us for a working sample and technical information.

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FOUNDRY SAND COMPANY — DETROIT
CERAMIC DIVISION

HIGH ALUMINA CONTENT • IDEAL FLUXING PROPERTIES

Lakefield NEPHELINE SYENITE

NEWS

"Going out after business"

Peter Sampson, president of The Sampson Co., Chicago, appliance distributing firm, states that several new dealers who have entered the field in the last 60 days, specializing only in Youngstown Kitchens, *have shown a profit since they started, merely by going out after business, instead of waiting for it to come to them.* The statement was made at a conference in Warren, Ohio, the first of a series which will bring the heads of all Youngstown Kitchen distributors to factory headquarters, replacing a single national convention.

Four-month washer sales exceed 1941 rate by 25%

Despite sharp fluctuations in factory sales of standard-size household washers in the first four months of this year (177,900, 208,500, 254,300 and 194,900), sales in that period were at a rate more than 25 per cent higher than for the year of 1941, highest prewar, when the total was 1,959,887 units, according to industry-wide figures reported by the American Washer and Ironer Manufacturers Association.

New Philco vice president to direct research and engineering

Leslie J. Woods has been appointed vice president-director of research and engineering of Philco Corporation, according to an announcement by William Balderston, president. Woods joined Philco in 1925. In his new capacity he will be assisted by David B. Smith, vice president-research and engineering.

PEI names research fellow

The appointment of George Warren as PEI research fellow at the National Bureau of Standards, Washington, D. C., has been announced by Edward Mackasek, managing director of the Porcelain Enamel Institute.

Warren spent a brief period in industry following high school, then continued his academic work at the University of Akron, and Ohio State University. He received both his Bachelor of Ceramic Engineering degree and his Master of Science degree from Ohio State.

As holder of the PEI research fellowship, Warren will work on test methods and testing equipment for the evaluation of the physical properties of porcelain enamel.

Friends of L. O. Reese, vice president and general manager of Armstrong Products Corporation, Huntington, West Va., will be pleased to learn of the arrival of a son, William Stuart Reese, on Tuesday, May 24.

C & L announce new model water heaters to meet buyers' market

Clayton & Lambert Mfg. Co., of Louisville, Ky., has met the buyers' market with new models in its Hoffman line of gas-fired, electric and oil burning water heaters, according to Rowland J. Miller, vice president and general sales manager. The new Hoffman heaters are offered in a variety of sizes and prices. The company will continue, as in the past, to follow the policy of selling water heaters only through plumbing jobbers.

New AGA director

Appointment of Leland B. Bonnett, vice president of Consolidated Edison Co. of New York, Inc., as a director of the American Gas Association, has been announced by H. Carl Wolf, AGA managing director. Bonnett replaces John C. Parker, vice president of Consolidated Edison, on the Association's executive board.

Gas-fired furnace sales up in March

During March, unit shipments of gas-fired warm air furnaces were 39.8 per cent greater than for the same month of 1948, according to manufacturers approximating 75 per cent of the industry. During the first quarter of this year unit shipments were slightly less (1.2 per cent) than for the first quarter of last year.

During the year ending March 31, reporting companies shipped 144,639 gas-fired furnaces. The manufacturers' value of these shipments was $25,983,400.

DeVilbiss spray finishing school announces six more sessions

Intensive training for industrial finishers operating DeVilbiss spray equipment is available at the DeVilbiss Spray Finishing School, Toledo,

Ohio, in courses of one-week duration which will take up on the following dates: July 25, August 22, September 26, October 31, November 28, and December 19.

Lectures, demonstrations and actual practice will be devoted to the latest methods and techniques of spray application. Interested persons should write well in advance for registration to The DeVilbiss Company, 300 Phillips Ave., Toledo 1, Ohio.

A bright spot in a sad scene

PHOTO COURTESY LOS ANGELES TIMES

On a Friday in early May, what had formerly been the scene of many a gay day of recreation was turned into a twisted mass of wreckage when fire swept Hollywood Park, former West Coast show place.

The accompanying newspaper photograph shows that all that was left of the mammoth grandstand, which only a few hours before had been ready for a brilliant race meet, was a grotesque expanse of heat-twisted girders. Of interest to porcelain enamelers and appliance manufacturers is the reported fact that one of the few remaining "bright spots" in the fire-ridden grandstands was the porcelain enameled sign readily visible at the left center of the photograph.

Although no "reserved seats" remain to sell, the sign proves what many another porcelain enameled product has shown previously—that neither fire nor flood nor storm can wreck the permanence of porcelain enameled metal.

Porcelain enamel table tops can be shipped with little damage if properly packed

A report received recently by *finish* from one of the major producers of porcelain enameled table tops indicates that by proper attention to the packaged product, tops can be shipped in quantity with little fear of damage in transit.

This company produces and sells an appreciable number of tops of all sizes to the cabinet industry. The company says it does not get complaints about breakage any more, simply because the cabinet customers have learned how to pack their cabinets. It is pointed out that the cabinets are handled by the same stores, and in the same departments, where breakfast sets are sold. They are subject to the same amount of warehouse abuse. They are given the same treatment by freight handlers as other products.

In referring to a specific instance, this manufacturer says that one of his good cabinet customers reports that out of the last 17,195 cabinets that were shipped in 1948 — all of them with porcelain enameled tops — only 80 tops required replacement. This represents .0046% damage.

The point raised is that if the cabinet manufacturer can get these results, why can't a breakfast set manufacturer do the same thing.

News officers at Westinghouse

The election of three new officers of Westinghouse Electric Corp. has been announced by the board of directors. James Jewell, manager of apparatus sales, and John McKibbin, assistant to vice president and manager of advertising and sales promotion, were elected vice presidents. Herbert MacDonald, treasury manager in the firm's eastern district office, was elected assistant treasurer.

Atomic energy used to study metal cleaners

When the government released radioactive compounds for civilian use, Wyandotte Chemicals Corporation made arrangements with the University of Wisconsin whereby work on the use of tagged atoms to study the mechanism of metal cleaning could be carried out. Arrangements for the study were worked out by T. H. Vaughn, vice president - research and development at Wyandotte, and Prof. John E. Willard, of the U. of W.

In current studies at the University, radioactive atoms are incorporated into the actual molecules of detergent compounds, such as carbonates and phosphates. Various materials—steel, aluminum, silver, zinc—are cleaned in the radioactive solutions, and studies are then made of the interactions that have taken place between the solutions and the solids.

Members of Wyandotte's technical staff are reported as confident that continuing work will reveal fundamental principles of detergency, and result in further improved cleaning products.

Reynolds succeeds Cooper (retired) as Carnegie-Illinois metallurgist

F. O. Cooper, Chicago district senior service metallurgist for Carnegie-Illinois Steel Corporation, retired May 31 after 44 years of service with this U.S. Steel subsidiary.

Peter A. Reynolds, recently associated with the company's Detroit metallurgical organization, has been appointed to succeed Cooper. Reynolds has been with the company since 1937, when he started as a metallurgical trainee in the sheet division at the Gary Sheet and Tin Mill. He has been a service metallurgist since 1941.

Three-day program for Pressed Metal Institute first annual convention

The first annual convention of the Pressed Metal Institute will be held in Cleveland, Ohio, July 20, 21 and 22. Headquarters will be in the Cleveland Hotel.

Technical and educational meetings are set up for all daytime sessions with the lighter side taking over only for two scheduled evening events.

Guests of the convention will be the 16 members of a visiting stamping productivity team from England.

A conducted tour of Republic Steel Corporation's sheet and strip mill in Cleveland is scheduled for the afternoon of July 20. The evening program will be a night baseball game between the Cleveland Indians and the New York Yankees.

A formal business session opens the morning program July 21 at which the annual business of the Institute will be discussed. Luncheon will be featured with a discussion of jet engines and jet propulsion by A. T. Colwell, vice president, Thompson Products, Inc.

The afternoon's technical discussions will be presented by the Toledo District of PMI. The speakers and their subjects are: Ray Peterson, Peterson Engineering Co., "How the Schools Can Aid in the Training of Die Engineer Personnel;" George Lober, Superior Spinning & Stamping Co., "How the Metal Spinners Work with Stamping Companies;" Homer Percival, Acklin Stamping Co., "Recognizing Seniority and Job Preference in a Stamping Shop; and Wm. VonBehren, Swartzbaugh Mfg. Co., "History of a Government Job" and "Rectangular Deep Draws in Aluminum."

A banquet and entertainment will fill Thursday evening, July 21, planned in cooperation with the PMI associate members.

Topic for Friday, July 22, morning session is "Where We Stand Today—A Review and Preview." Speakers on this program will include Oliver F. Fancey, Washington representative of the Institute; Eugene Schwartz, labor relations consultant to the Institute; and Robert A. Weaver, Jr., a member of the Small Business Advisory Committee to the Secretary of Commerce.

Luncheon on July 22 is planned as a major event in the three-day program. Burnham Finney, editor, *American Machinist,* will make the key address. In addition, representatives of the English productivity team will offer brief comments on the American scene as they have observed it. This luncheon will be open to the entire metal working trades in the Cleveland area. The Cleveland District will be host at an adjournment party.

Details regarding the convention are available from Pressed Metal Institute, 13210 Shaker Square, Cleveland 20, Ohio.

Binks plant records one million man-hours without a disabling injury

One million man-hours work time without a disabling injury in the entire period is the record achieved in the plant of Binks Manufacturing Co., in Chicago. An appropriate plaque commemorating the event was presented to Burke B. Roche (left in photo), president of Binks, by W. D. Keefer, of Lumberman's Mutual Casualty Co., at a dinner in the Midwest Athletic Club of Chicago recently.

According to records of the National Safety Council, only six out of 1000 industrial plants in the country are able to operate one million man-hours without a lost-time accident. In the case of Binks, manufacturers of spray finishing equipment, a coordinated safety program was established and enforced through the direction of shop foremen.

American Stove moves Harvey plant operations to St. Louis

Plans to consolidate the manufacture of all Magic Chef domestic gas ranges in one factory in St. Louis were announced by Arthur Stockstrom, president of American Stove Company. With the consolidation of all domestic gas range manufacture in St. Louis, the American Stove factory at Harvey, Illinois, will be closed

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Many manufacturers depend on Advance for complicated stamping dies for difficult drawing and forming operations. The largest job, or the smallest, can benefit from Advance tooling techniques which have revolutionized many manufacturing processes.

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in July or August. The factory, which has made gas ranges for 52 years, contains 300,000 feet of floor space and has been employing about 500 people.

Up to now the company has produced domestic gas ranges in St. Louis, Cleveland, and Harvey. Stockstrom says the consolidation should result in greater standardization of parts, better use of mass production technique, and lower administrative costs. The firm's St. Louis factory, at 2001 S. Kingshighway, has been doubled in size since the war, and now has about three times its prewar productive capacity. Besides gas ranges, it turns out coal, oil, and combination cooking ranges. Stockstrom states that more gas ranges can be turned out in one factory now than in all of the company's factories prewar.

The American Stove factory in Cleveland, Ohio, will continue to operate, specializing in gas cooking equipment for hotels and restaurants. Another factory in Lorain, Ohio, makes oil space heaters and forced air furnaces. The company's foundry at Indianapolis, Indiana, makes various castings for the factories.

New modern facilities for Vitro

The Vitro Manufacturing Co., producers of colors for the porcelain enameling industry, has announced completion of the remodeling of its headquarters and general offices at Corliss Station, Pittsburgh, Pa.

According to H. C. Greene, company treasurer, this represents another completed step in the firm's overall expansion and modernization program. Within the past two years, Vitro has increased its manufacturing and production facilities more than 30%, and has installed a new research laboratory and reference sample system.

Two YS&T men die during May

Edward "Ted" Walton, in charge of excess accumulations in the flat rolled sales department of The Youngstown Sheet and Tube Co., died May 17.

Orville B. Ewing, manager of the New Orleans district office for Youngstown, died May 11.

Trichlorethylene plant to be constructed in Ohio

To help meet the heavy industrial demand for trichlorethylene as a metal cleaning and oil-extraction solvent, a new manufacturing plant is going to be built in Ashtabula, Ohio, by Hooker-Detrex, Inc., it is reported. A 25-acre site has already been acquired, and it is planned to start immediate construction in order to have the plant in operation early in 1950.

Youngstown sales promotions

Philip G. "Jerry" Boyd has been appointed Chicago district sales manager for The Youngstown Sheet and Tube Co., succeeding the late Arthur Purnell, Lew E. Wallace, general manager of sales, has announced.

Wallace also announced the appointment of John P. Feagley as New York district sales manager. Boyd has been with Youngstown since 1929; Feagley, since 1932.

American Cyanamid man heads CMRA

George W. Russell, assistant sales manager of American Cyanamid Company's Industrial Chemicals Division, was elected president of the Chemical Market Research Association at that organization's annual business meeting in New York City, June 9.

The Chemical Market Research Association was organized in 1940. Its membership consists of market research specialists from some 90 leading chemical companies in the United States and Canada.

Huff elected president & director of Bliss & Laughlin

Carl L. Huff, former vice president and manager of sales of Bliss & Laughlin, Inc., manufacturers of cold finished steel, has been elected president and director, according to an announcement.

Huff joined Bliss & Laughlin's sales department in 1923. In 1929 he was made manager in charge of western sales and in 1939 was named vice president in charge of sales.

Also elected to new posts with the firm are George Spaulding, vice president in charge of eastern operations; Harry Lillengren, vice president and

treasurer; and E. F. Thomason, secretary.

Oakite elects new president

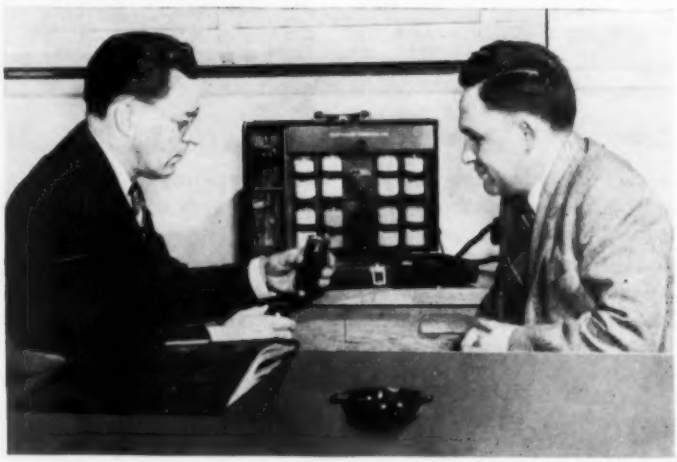
At the recent annual meeting in New York City, of stockholders and employees of Oakite Products, Inc., manufacturers of industrial cleaning and allied materials, announcement was made of the election of John A. Carter as president of the firm. Carter has been associated with Oakite for 34 years, serving in recent years as assistant to the president, and since December, 1947, as general manager.

D. C. Ball, founder and president of Oakite, was elected chairman of the board. Also announced at the meeting were the election of David S. Ball as first vice president, and the re-election of H. Liggett Gray as vice president, James Beckett as treasurer, and David Hearn as secretary.

Fritsch named member of ASTM's new standardization committee

Paul R. Fritsch, manager of identification division of Goodyear Tire & Rubber Co.'s advertising department, has been named member of the new standardization committee for the American Society for Testing Materials. The new committee will be concerned with test methods and specifications in the field of porcelain enameled products.

Northwest Chemical introduces new selling tool



A sample case for carrying all products that are in general use, together with equipment for their control, has been introduced by Northwest Chemical Company for their line of industrial metal cleaners. There are liquids and powders, some for use individually, others in combination, to get the correct pH for the type of soil being removed.

R. J. McCracken, president of the firm, says "with this equipment we know that our men have enough to work with right on the job, to make a correct recommendation as to the product or products to use, as well as handle the installation and set up the control."

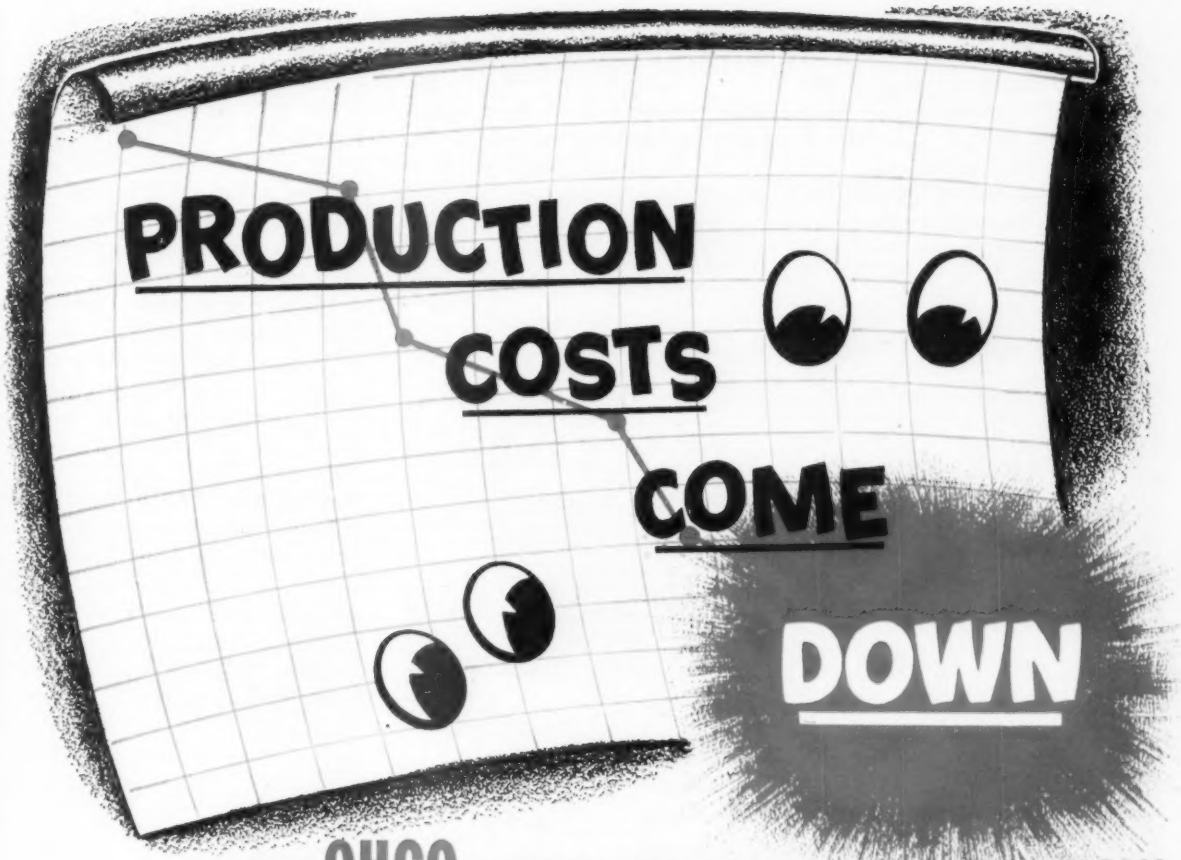
Shown in the photo viewing the sample case are S. M. Bailey, on left, and Al Girley, purchasing agent at the Northwest plant.

John King of England represents 56 years of enamelling

At the age of 76, John King has had a life-times' experience in the vitreous enamelling industry.

In 1892, Mr. King was appointed by Messrs. W. & A. C. Russell & Co. of Scotia Foundry, Pendleton, Salford, later Messrs. Fletcher Russell & Co. Ltd., to inaugurate an enamelling department. Having successfully accomplished this, he was approached by The Richmond Gas Stove and Meter Co. Ltd., of Warrington, in 1902 to install and manage one for them, where in 1912 he was joined by his son John Jr., and, with the exception of service by John Jr. in the Royal Flying Corps during the first World War, the partnership has not been severed.

In 1918, the Kings decided to go into business on their own account in Chesterfield, and from that day to the present time, their firm, John King & Son (Enamellers) Ltd., are reported to have built up a fine business with quality and service their primary objects.



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Production costs are sometimes hard to control. They go up . . . they go down — and not always when you expect them.

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Hommel enamels follow a definite process of production in our plant — a pattern that has been designed to assure a product that satisfies all demands. Besides giving you a finish that is not affected by thermal shock, mechanical shock, scratching, freezing temperatures or acid, Hommel's enamels are *made* to fit into an uninterrupted production set-up . . . none of those costly production delays with Hommel's enamels! Hommel's ground coats, zirconium cover coats, and Tite-Wite frits cover the complete firing range from 1250°F. to 1600°F.

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Laboratory Controlled Production of Ceramic Supplies

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World's Most Complete Ceramic Supplier

The Enameled Utensil Manufacturers Council has consolidated its promotional efforts by moving its promotion office from The Merchandise Mart in Chicago to the Council headquarters, 2130 Keith Bldg., Cleveland 15, Ohio.

Apex moves dishwasher production

The Apex Dish-a-Matic dishwasher, formerly assembled at the company's Lake State Products subsidiary in Jackson, Mich., will in the future be produced at the main Cleveland plant of Apex Electrical Mfg. Co., C. G. Frantz, president, announced.

Tappan stove production increases; sales 85% ahead of best prewar year

Alan P. Tappan, president of The Tappan Stove Company, added a bright note with the announcement that the Mansfield (Ohio) firm has increased production by 25 per cent to meet the increase in orders.

"With the increase in production," Tappan said, "we have added 75 employees to the pay roll. This is in addition to others who have been hired in recent months."

"Business is good," he added. "Our inventory is at a lower point than we normally carried before the war and orders are coming in currently at a rate in excess of our production."

He pointed out that sales for the first five months of 1949 have been maintained at a rate which is 85 per cent in excess of 1941, the best prewar year in the history of the company.

U. of I. gets dielectric heating unit

The presentation of a high frequency dielectric heating unit from Laclede Christy Clay Products to the Department of Ceramic Engineering at the University of Illinois has been announced by Dr. A. I. Andrews, head of the department. The portable unit has a capacity of 20,000 Btu per hour operating on 440 volt, 60 cycle,

Snapshots of Central District enamelers

Finishfotos show, left to right: R. W. Piper, of Apex Alkali Products; J. W. Frazier, of V. B. Punderson; C. A. McCafferty, of Tappan Stove; and Bob Louden, of McGean Chemical.

3 phase current. Numerous plans are being made for research studies utilizing this new piece of equipment.

Pennsalt's McIntyre gets new appointment

Formation of a new sales district encompassing New York, New Jersey, eastern Pennsylvania, Maryland and Delaware to provide more efficient service by its Special Chemicals Division, has been announced by Joseph J. Duffy, Jr., manager of sales of this division of Pennsylvania Salt Manufacturing Company.

Horace F. McIntyre, Philadelphia, has been appointed district sales manager, Duffy said. J. W. Weaver, Baltimore representative, has been transferred to the Philadelphia territory.

New Nesco president elected

Willard H. Sahloff was elected president and chief executive officer of National Enameling and Stamping Co., at a recent Nesco board meeting, to succeed Alfred Kieckhefer who was made chairman of the board. Sahloff recently resigned as executive vice president of Montgomery Ward and Co.

New manager for G-E apparatus department

Harold E. Strang, of Schenectady, engineering manager of the affiliated manufacturing companies department of General Electric Company, has been appointed manager of the G-E

to Page 62 →

NEW FERRO SERVICE BOOK for the Metal Finishing Industry

36 Pages of the latest oven engineering data is now available to those with heat drying or finishing operations involving dipping, spraying, flow-coating or roller-coating application methods. In this book *Ferro* tells you the performance you can expect from *seven* different oven designs . . . from the batch to a floor-type conveyor oven installation. The types of products that can generally be processed in each installation are listed, plus other helpful engineering data. Check the complete table of contents on the opposite page; if this book applies to your business, write for your copy today.

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FERRO ENAMEL CORPORATION • ***Engineering Division***
4150 East 56th Street **Cleveland 5, Ohio**

→ *from Page 59*

Apparatus Department's Meter and Instrument Divisions at Lynn, Mass., Henry V. Erben, company vice president and general manager of the department, has announced.

Carnegie-Illinois presents service awards

Rudyard Porter, left, service metallurgist of Carnegie-Illinois Steel Corporation, and P. O. Carlson, right, metallurgical service coordinator for Carnegie, received 30-year and 25-year service buttons respectively at a dinner given recently at Chicago's Union League Club. The presentation was made by L. J. Rohl, chief metallurgical engineer for the company. Porter and Carlson make their headquarters in Chicago while Rohl's office is in Pittsburgh.

New Florence 13-model electric range line

C. F. Lucas, vice president - sales, for Florence Stove Company, has announced that Florence will shortly introduce a completely new electric range line of 13 models.

Starting with the apartment size, which retails for approximately $159, and three other basic models, Lucas reports that Florence has created a 13-range line by developing backguard accessories carrying various automatic features. These accessories can be used on all full-size models, including the one shown above.

T. Curtis McKenzie, president of Klem Chemicals, Inc., Dearborn, Mich., recently announced the appointment of J. M. O'Brien as assistant sales manager. O'Brien was formerly southwestern division manager for Diversey Corporation. He will assist A. J. Pettit, general sales manager.

New sales manager for Bellaire

Forest Benson, sales consultant for Bellaire Enamel Company since the first of the year, has been appointed general sales manager. Benson's long experience in the cooking utensil field was with Aluminum Cooking Utensil Company. He was also national sales director of Norris Stamping & Mfg. Co., of Los Angeles.

Lucas to Florence Stove board

C. Fred Lucas, vice president in charge of sales, was elected to the board of directors of Florence Stove Company at the annual stockholders and directors meeting in Boston. All present officers of the company were reelected. Robert L. Fowler is chairman of the board of directors and Robert H. Taylor is president.

Other officers reelected are: Theodore Keller, vice president in charge of the Gardner plant; George Colburn, vice president in charge of the Lewisburg factory; William MacKay, vice president in charge of Kankakee operations. Albert Luke was reelected treasurer and secretary, and Bevis Ashworth is assistant-treasurer.

Philco produces three films as part of sales training program

To aid the company's distributors and dealers in training retail salesmen, Philco Corporation recently produced three motion pictures featuring tested selling techniques as applied to refrigerators, home freezers and single-room air conditioners.

"Surveys indicate that about 50% of the retail salesmen in the appliance field have had no prewar experience and thus have no background in selling in a competitive market," Raymond B. George, sales promotion manager said. "To meet this situa-

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VALVES FOR GAS by "DETROIT BRASS"

Assure MAXIMUM Efficiency and Economy

Valves determine, in large measure, the efficient operation of the appliance, the comfort resulting from use and the economy in operation.

● Your appliance demands a dependable valve—one that on past performance has proved itself a control to be relied on.

● Your appliance demands a trouble-free valve—one that doesn't talk back or call for attention but produces smoothly with endless satisfaction.

● Your appliance demands a valve made to high standards—to AGA specifications, as a guarantee of performance.

And when you use Detroit Brass valves you get all this and more!

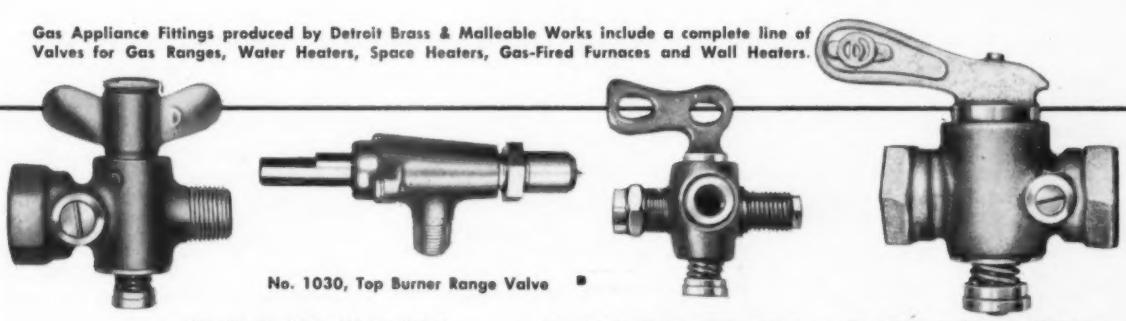
+ You get valves designed to perform for the life of your appliance.

+ You get valves engineered and produced out of more than fifty years experience in the development and manufacture of valves for gas.

+ You get valves stamped with the nationally-known "D", a symbol of pride in workmanship.

These are some of the reasons why so many successful companies depend on Detroit Brass for valves. Why not join them in realizing these advantages by doing business with us?

Gas Appliance Fittings produced by Detroit Brass & Malleable Works include a complete line of Valves for Gas Ranges, Water Heaters, Space Heaters, Gas-Fired Furnaces and Wall Heaters.



No. 1030, Top Burner Range Valve ■

No. 1500, Water Heater Valve

No. 1400, Space Heater Valve

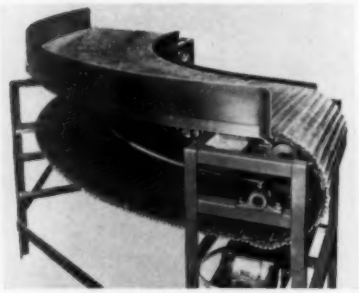
No. 2000, Main Shut-off Valve

DETROIT BRASS & MALLEABLE WORKS

DETROIT 9, MICHIGAN

New Supplies and Equipment

G-21. Powered flat conveyor travels around curves



A powered flat conveyor, that can travel around almost any desired curve, has been developed. Through the use of a new conveyor chain, a balanced weave wire mesh belt is guided around curves, and, at the same time, wear on the edges of the wire mesh belt is eliminated because they do not drag against guides. This conveyor may be used in conjunction with other flat conveyors, or the entire conveyor, including straight and curved runs, may be continuous.

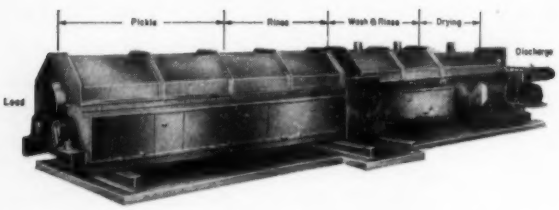
More Information

For more information on new supplies and equipment reviewed here, fill out the order form on this page.

G-23. Drop tester for reduction of shipping damage

An important aspect in reducing damages to goods in transit is the use of a drop tester to determine the performance of the shipping container. The tests that are conducted with this contrivance are the flat drop test, the edge drop test, and the corner drop test. Width between arms is 29″, depth of panels is 24″, maximum testing height is 60″, and shipping weight is 280 lbs. The tester can be furnished without steel base plate for mounting on solid floor with lag screws.

G-22. Continuous automatic equipment for processing metal parts



Special continuous automatic equipment which may include as many as nine operations in tandem can be used for washing, rinsing, annealing, spray cooling, pickling, rinsing, washing, rinsing and drying. The work moves mechanically at any required rate through every step in the process, requiring no labor other than at the charging end. From the discharge of the pickling unit, the work goes into a conveyor or tote boxes.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ No._____ No._____ No._____

No._____ No._____ No._____ No._____

Name _____ Title _____

Company _____

Company Address _____

City _____ Zone____ State _____

NEW LITERATURE

701. Case and cabinet forming machinery and dies

A new 12-page illustrated catalog describes many types of machines developed by Cyril Bath Co. for efficient manufacture of metal cabinets, cases, housings, liners, shrouds, etc.

Included are contour forming machines, multibenders, tangent benders, Sturdybender press brakes, and tangent bending fixtures for attachment on Sturdybender press brakes. Also shown are press brake dies for bending, flanging and beading.

702. Illustrated book features modern coated abrasives service

To mark completion of its modern factory for the development and manufacture of coated abrasive products, a 32-page, two-color book presenting outstanding features of new service, research and production facilities at its new plant has been published by The Carborundum Company.

Entitled "The Finest in Coated Products . . . Carborundum," this book is illustrated with dry brush drawings and describes the closely controlled, scientific methods employed which assure production of quality abrasives. In addition, it outlines the importance to industry of

to Page 72 →

Time-Proved for Economy

SOUND research, in-the-plant testing and laboratory checking at every phase of production *time-proves* all Century Frits. Each type of frit, whether for ground or cover coat, is checked in this manner to insure you complete satisfaction. Century's plant and laboratory experts take pride in their record of producing fine, time-proved frits for over 20 years.

This constant alertness means profits for you in fast, economical enameling operations . . . profits resulting from speed, fewer rejects, and neater overall appearance. You'll find it will pay to check Century frit in your plant. Write for a trial run today.

Enameling Job Orders

We have additional space in our plant at present for large or small job orders. Write or phone us today for complete information.

CENTURY VITREOUS ENAMEL CO.,
6641-61 S. Narragansett Ave., Chicago 38, Ill.

FRIT from CENTURY
FRIT MASTERS

Chicago enamelers Maypole party

THE annual Maypole Party of the Chicago District Enamelers Club was held Friday, June 3, at the Gary Country Club, Gary, Indiana.

This year's outing was acclaimed as one of the finest in recent years with a capacity crowd attending the evening dinner.

The afternoon program consisted of golfing and a tour of the Gary Sheet and Tin Mill of Carnegie-Illinois Steel Corporation. In the evening, following the dinner, golfing and door prizes were awarded.

The photo below shows part of the group in the dining hall at Gary Country Club.

The foursome on the right consists of A. C. Indermuehle, Jerry Hofstetter, Arol Hall, and Frank Weber.

The threesome on the lower right consists of Ed Bolin, Mel Gibbs, and Carl Mueller.

finishfotos

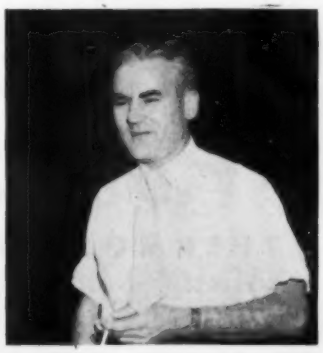
Tour of Carnegie-Illinois plant

BEFORE attending the Maypole Party, the *finish* reporters toured the Gary Sheet and Tin Mill of Carnegie-Illinois Steel Corporation, at Gary, Indiana, under the personal guidance of F. O. Cooper, retired Chicago district senior service metallurgist. Cooper had been with this U.S. Steel subsidiary for 44 years prior to his retirement, on May 31, a few days before the plant tour.

It was pointed out during the tour that the plant, consisting of 300 buildings scattered over some 460 acres, can produce approximately 1,600,000 tons of steel sheet and tin plate a year.

Carnegie-Illinois personnel shown in the photos are: right, C. A. Ferguson, general superintendent; lower right, J. E. Angle, assistant general superintendent; below, F. O. Cooper and Rudyard Porter, Chicago district service metallurgist, and chairman of the Maypole Party Committee; lower left, P. R. Lawrence, assistant to the general superintendent.

finishfotos



→ *from Page 62*

tion, Philco and its distributors have organized a comprehensive sales training program designed to inform the newcomer and refresh the veteran appliance salesman. Our new training films, one each to cover Philco refrigerators, freezers and air conditioners, are an important phase of this program."

The new movie on refrigerators is an 18-minute film with the format of a play. Opening scenes show conditions in the lush period of 1947 when salesmanship seemed unnecessary and a mere order-taker could easily sell refrigerators. The action quickly moves on to 1949 and illustrates the bewilderment of a salesman who has failed to learn the features of refrigerator models and the basic principles of selling.

Then the movie shows an expert appliance salesman in action as he demonstrates features to prospective customers and makes the sale. There is a judicious mixture of humor and competent salesmanship.

ASTM committee to develop specifications for ceramic finishes

At a meeting of Committee C-22 of the American Society for Testing Materials, in Philadelphia, June 17, the scope of the Committee was set as follows: The formulation of definitions of terms, test methods and specifications pertaining to those materials generally considered to be in the field of commercial porcelain enamel products. Ceramic and ceramic-metal coatings for metals are included. Officers of Committee C-22 are W. N. Harrison, National Bureau of Standards, chairman; D. G. Bennett, University of Illinois, vice chairman; and G. H. Spencer-Strong, Pemco, secretary.

Chairman Harrison appointed a temporary organizing committee consisting of: J. W. Gregory, Sears Roebuck; G. H. McIntyre, Ferro Enamel; F. A. Petersen, U. of I., EUMC; W. H. Pfeiffer, Frigidaire; F. R. Porter, Inland Steel; J. C. Richmond, Bureau of Stds.; J. A. Schiefferle, General Electric.

This organizing committee then set up the following sub-committees: (1) Definitions and Nomenclature, (2) Test Methods, (3) Specifications, and (4) Research.

W. H. Pfeiffer was selected as chairman of a committee to write rules and bylaws for the committee. Committee membership will be polled to determine which committees the members wish to serve on. G. H. Spencer-Strong is also on this committee.

In addition to the temporary organizing committee, the following also attended the meeting: J. J. Canfield, Armco; S. E. Hemsteger, Briggs; G. E. Campbell, Borg-Warner; E. P. Bolin, Chi Vit; E. C. Dexheimer, Nesco; B. J. Sweo, Ferro; G. E. Terry, Hotpoint; Edw. Mackasek, PEI; J. R. Beam, Universal-Rundle; R. F. Bisbee, Westinghouse; J. F. Matejczyk, O. Hommel; Wm. Irby and G. H. Hamden, G.E.; D. G. Bennett (U. of I.), AAF; P. R. Fritsch, Goodyear; R. Skagerbers, Public Housing Admin.; J. H. Chilcote, Bureau of Ships, USN; E. P. Flint, Armour Research Foundation; L. S. O'Bannon, Battelle Memorial Institute; M. A. Tuttle, N.C. State College of Ceramics; V. D. Frechette, N. Y. State College of Ceramics; R. E. Hess, ASTM representative; and L. C. Gilbert.

Letter to *finish*

Gentlemen:

While attending the A.M.A. conferences in Atlantic City, it was apparent that the Safe Transit program has created quite a bit of interest in all industry.

It was mentioned by all members participating in the panel sessions.

The people with whom I discussed the program were unanimous in their praise of it.

They were of the opinion, as I am, that the industry group is to be congratulated on having set into action such a far reaching and beneficial program so quickly.

I am forwarding to you a copy of the Conference Reporter which I am sure you will find interesting.

Wilmer J. Balster
The Don L. Quinn Co.
Chicago, Illinois

Packaging exposition most successful in 18 years

(Continued from Page 33)

be in trouble. Assuming that you have adequate written specifications, you can follow one of two courses of action:

1. Insist that your supplier make tests on your cases and submit the detailed reports to you.
2. Send samples of your cases to a commercial laboratory and have them tested against the written specifications.

"This suggested program is simple and direct. It is easy to follow and will pay big dividends."

(It will be remembered that the recommendations of the National Safe Transit Committee include pretesting specifications for the PACKAGED PRODUCT which goes a step further than the testing of containers only.)

Short term outlook for packaging materials

Lee R. Forker, chairman, Container Committee, National Association of Purchasing Agents and general purchasing agent, Quaker State Oil Refining Corp., in a discussion concerning the short term outlook for packaging materials, said: "Container manufacturers in general are in very strong financial condition. Successful operating profitable years for 1946, 1947, and 1948 have permitted new plants to be built, not only increasing capacity but also improving efficiency. . . .

"Present labor costs and the trend make it very improbable that container costs to the buyer will be substantially reduced in price except at a sacrifice of profit. If container costs are to decline, raw material costs are the logical factors to watch, especially with a reduction in volume."

Wooden containers outlook

In referring specifically to wooden containers, Forker stated: "The short range outlook for lumber supply indicates a shortage for the Pacific

Northwest due to the recent severe winter, noting that this area produces about one-third of the soft wood container requirements of America. The present outlook for the second quarter indicates that the supply of wooden barrels, stays, shooks, boxes, and crates will be readily available to meet any reasonable demand, with additional improvements in both quality and availability. Lumber conditions continue on the upgrade and quality and quantity of seasoned lumber have improved, which has resulted in a better wooden package, and this trend should continue."

R. F. Weber, of International Harvester Company, discussed problems of the receiver in intra-plant shipments. Included in his talk was this comment: "The objective of any materials handling operation is to determine how to transport materials in the shortest possible time with the least expenditure of money and energy for maximum production efficiency. What do we accomplish by efficient materials handling practices?

"1. Reduction of handling costs; 2. Economy of warehouse and storage space; 3. Reduction of inventory; 4. Reduction of accidents to men and materials; 5. Reduction of loss and damage complaints; 6. Shorter production cycle; 7. Promote sales appeal; 8. Develop better industrial relations.

"We are all trying to reduce the number of handlings of parts from source of supply to production lines, and eventually delivery of finished products to our customers."

(Read "How International Harvester Answers Materials Handling and Product Protection Problems," page 19, this issue of finish.)

Handling factors to consider in container design

Burr W. Hupp, of Drake, Startzman, Sheahan, Barclay, Inc., discussed handling factors to consider in container design. The following comments are from his talk: ". . . I wish the word *handleable* were more familiar. It is a good, expressive term. By a handleable container I mean one designed so that it can be picked up, carried, and set down with a minimum of expense all the way along the chain of distribution, from the producer who puts the product into the container to the consumer or user who takes it out. The design of containers that are handleable is a subject that I believe deserves far more attention from package engineers and designers than it has been getting. . . .

"You will be doing a good turn for those who buy from you and handle your products. This may mean money in your pocket if it helps to increase your market. On the other hand, it may not actually benefit you in a dollars-and-cents way. But we must remember that the packages you create will be handled by many people before your product reaches the consumer. If a new package is not real burden to you and will help someone else reduce his costs, why not help him? The packages you design or specify are handled by other people, and I think it is important that you keep their point of

view and their requirements in mind."

Economic outlook for packaging suppliers and users

Charles E. Lewis, Office of Domestic Commerce, Department of Commerce, quoted many interesting figures in his talk, "The Economic Outlook for Packaging Suppliers and Users." A description of common horse sense or sales sense could certainly be given to the following excerpt from his closing remarks: "Through most of 1946, 1947, and 1948, the American manufacturer found himself in the enviable position of having business hunting him, or in plain words—in a seller's market. It was wonderful. For awhile, it looked like it could go on forever. But now that many of us have painfully found out this is not the case—that we are back in competition and we have to get out and sell—instead of charting a course and moving resolutely ahead with the fortitude and confidence for which the American business man has always been world-famous, many are fumbling around with a sort of doing-nothing attitude and reaching for the crying towel.

"What we should be doing—and may be doing without knowing it—is catching our second wind, so to speak. Some of the foremost economists of this country, several years ago, expressed the belief that this country and its economy could not be isolated and survive in today's world. They told us that we were moving more and more into an era of world trade, of a balanced world economy, and that the American business man of vision would be the one who no longer was planning his business on a local basis only, but was eagerly facing the real future—the world market. We have just passed one milestone—that of satisfying the pent-up post-war demand. Why isn't it time to lift our heads to the vast potentialities of the world markets, and to new developments, new ideas, new techniques, and to quit crying about the loss of an abnormal demand that we knew could not be sustained in this decade."